

INTEGRATING SYSTEMS AND CORPORATE PLANNING

INPUT

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OFFICES

Headquarters

1943 Landings Drive
Mountain View, CA 94043
(415) 960-3990
Telex 171407

Detroit

220 E. Huron
Suite 209
Ann Arbor, MI 48104
(313) 971-0667

New York

Park 80 Plaza West-1
Saddle Brook, NJ 07662
(201) 368-9471
Telex 134630

United Kingdom

INPUT, Ltd.
Airwork House
35 Piccadilly
London, W1V 9PB
England
01-439-8985
Telex 23116

Italy

Milan 284-2850
Telex 310352

D-6380 Bad Homburg
West Germany
Telex 418094

AUTHOR

Integrating Systems and Corporate

TITLE

Planning

U-CPL

1984

c.1

Data Service Company, Ltd.

Building

Kita Aoyama

Minato-ku

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INTEGRATING SYSTEMS
AND CORPORATE PLANNING

MARCH 1984

III THE NEED AND THE IMPEDIMENTS

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- Ours is an age of uncertainty, with an evolving economy and an uncertain future. But managers must still forge a path of action in a viable direction. The new environment will require highly efficient operations, marked by the integration and application of technology. One must continually adapt and infuse the latest technologies and build upon the technological infrastructure, providing information and information handling services where and when needed.
- These IS resources are, in fact, strategic tools in that they can assist companies in implementing strategies. And for some companies IS can even become a direct part of products and services. But how does one plan in a dynamic environment? The key is to use the capabilities of all functions within a company, including IS, and to promote communication between functions so that all are aware of each other's potential.

A. WHY PLAN INFORMATION SYSTEMS?

I. BACKGROUND

- The primary objective of each function within an organization, including IS, is to contribute to the ability of the organization to make a profit. In order to do this, the IS manager must at a minimum create an operation that provides

the necessary services for the minimum cost that is consistent with being able to meet the evolving needs of the overall organization.

- Typically IS is considered to be a service for the organization. Planning has been isolated from the IS functions and has been generally in a short-range, adaptive mode because:
 - There are rapid changes occurring in hardware, software, and communications technology.
 - There is a high rate of personnel turnover in IS, resulting effectively in a scarcity of skilled personnel.
 - There is a scarcity of financial and managerial resources.
 - There are constant changes in system requirements.
 - There are frequent and unexpected user demands, due to activities such as new marketing programs, new product design, legal and regulatory changes, and competitive environment shifts.
- IS management must realize that, due to the information technology explosion, they themselves are also the agents of change and should be in the best position to plan or contribute to change. For example, in insurance companies there is growing belief that expert systems will reduce the need for skilled, highly paid underwriters. This implies increases in technological investment and utilization, profound human resources changes, and changes in the profit picture. Planning for these changes is mandatory.
- IS activities clearly represent an area of great strategic importance in some companies. One respondent to our survey said that "IS is a competitive weapon." IS needs the guidance of corporate goals, but the achievement of these goals can be severely affected by IS performance and capabilities, or the lack thereof.

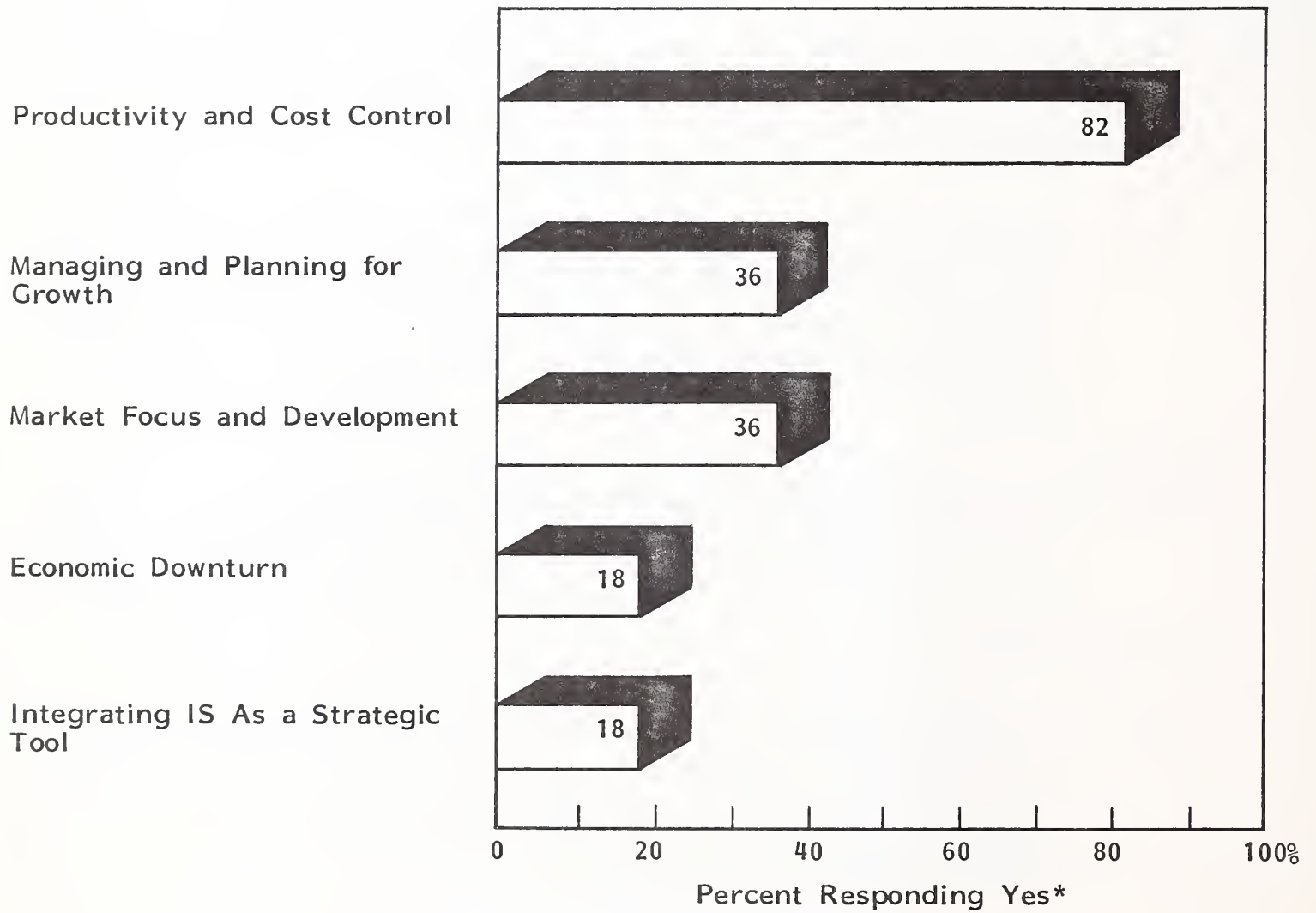
- The use of IS in banking is a clear example of how IS activities are strategic in nature. There must be integrated planning in which the general management of the corporation, the line management of revenue operations, and the management of service functions (including IS) all participate.

2. ISSUES

- The business planners and general management level respondents identified the issues listed in Exhibit III-1 as those being addressed in their current planning efforts.
- Generally, there was more interest in cost control than in business expansion. Companies in a business expansion mode were more inclined to see IS as a competitive weapon. (It may be that IS can only be considered a strategic tool if a company is in the expansion mode, and the capital to enhance IS is available.)
- IS planners and general-management-level respondents identified the issues listed in Exhibit III-2 as those driving their current planning efforts. From the list of IS issues it is clear that IS issues are predominantly technological in nature.
- The only issues clearly held in common were productivity, cost control, and integrating IS as a strategic tool, although the latter was not of primary importance. It would seem that issues held in common would be a driving force for integrated IS and business planning.
- While IS management and planners would argue that their issues stem from business issues, it is interesting to note that they do not articulate the driving business issues, but rather the resultant technological issues. It would perhaps be advisable for IS personnel to show their understanding of their function within the organization by tying technological issues directly to business issues.

EXHIBIT III-1

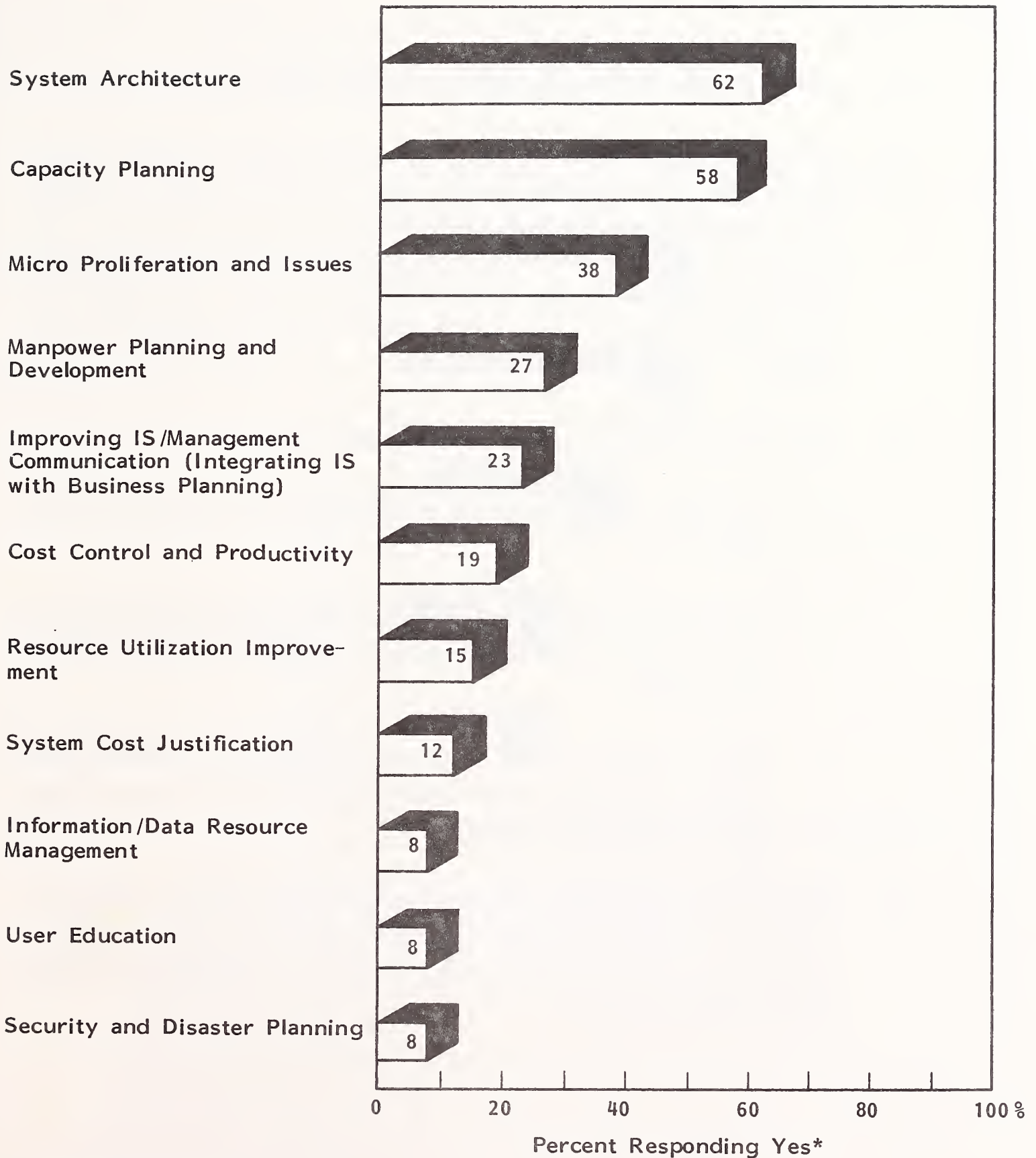
ISSUES IDENTIFIED BY BUSINESS PLANNERS



* Multiple responses possible

EXHIBIT III-2

ISSUES IDENTIFIED BY I.S. PLANNERS



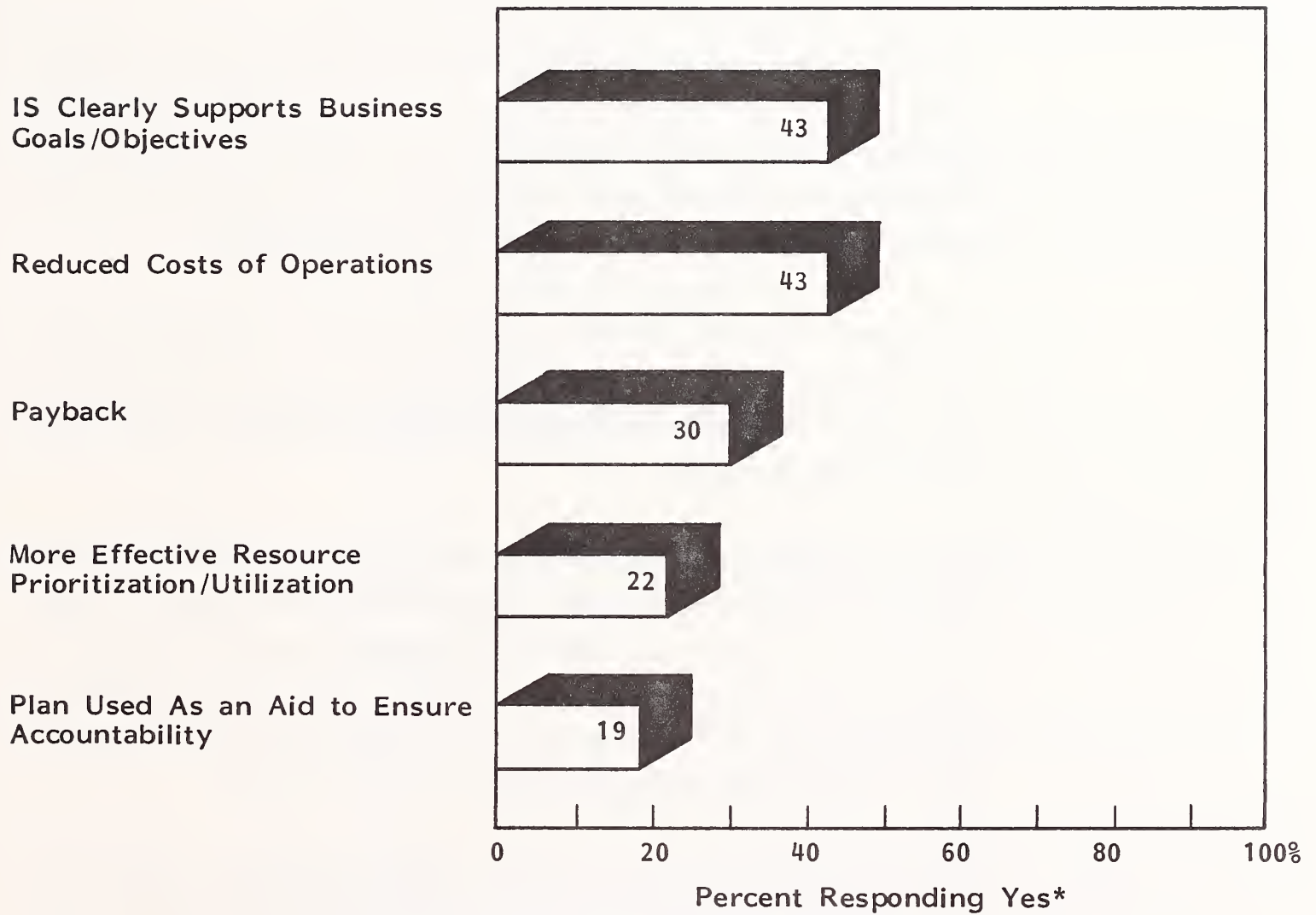
* Multiple responses possible

B. WHAT ARE THE BENEFITS OF INTEGRATED I.S. AND BUSINESS PLANNING?

- Exhibit III-3 lists benefits achieved in companies with an integrated plan.
- IS clearly supports business goals. Examples were given of better customer service with more current information, more new lines of business developed, and more users promoting their own productivity by using information technology as a tool. The overall needs and capabilities of the corporation were made more apparent through integrated planning efforts. The company was more able to take advantage of technology in terms of competitive positioning.
- There were reduced costs of both IS and business operations.
 - Redundant system acquisition was avoided through planning and coordination.
 - IS development efforts were better scoped. Greater understanding of requirements was achieved via study by both IS and line personnel participants.
 - At one company, IS was decentralized and work was spread to smaller systems at less cost than if the work was done on corporate headquarters' centralized systems.
- Eleven of the respondents stated that they had achieved a specific payback as a result of integrated planning. (Note that most of the companies would not report their specific payback because they were concerned that it would divulge their strategies.)

EXHIBIT III-3

BENEFITS OF INTEGRATED PLANNING



* Multiple responses possible

- In one case the business plan called for more focus, and the result was divestiture and acquisition activity.
 - IS was called in by general management to review an acquisition candidate. IS determined that existing manufacturing and financial systems at headquarters could accommodate the load of new products and plant control necessitated by the acquisition.
 - Further, headquarters was about to take on the administrative load and eliminate the administrative systems of the acquisition candidate. Headquarters determined there would be a savings of personnel and equipment as a result of this consolidation. With IS assistance the profit to the company from the acquisition was \$20 million.
 - In another case the company computerized the management of its timberland base. This led to smarter decisions about growing trees and was largely responsible for an improvement of over 30% in timber yield over the last few years.
 - Another company said that their market share increased from 23% to 30% over the last three years because of the value added to their customers as a result of offering information services in addition to products and product distribution services. They were also able to lower operating costs as a result of IS. These benefits were achieved through joint IS and business planning.
 - Yet another company attributed nine years of continuing growth to IS and the open communications between all units, including IS and general management.
- Better resource utilization was identified as a benefit of integrated planning. More appropriate priorities for human, financial, plant, and system resources were established. Specifically, there was better teamwork, and a balance was

reached between product/market development and human development as a result of information systems.

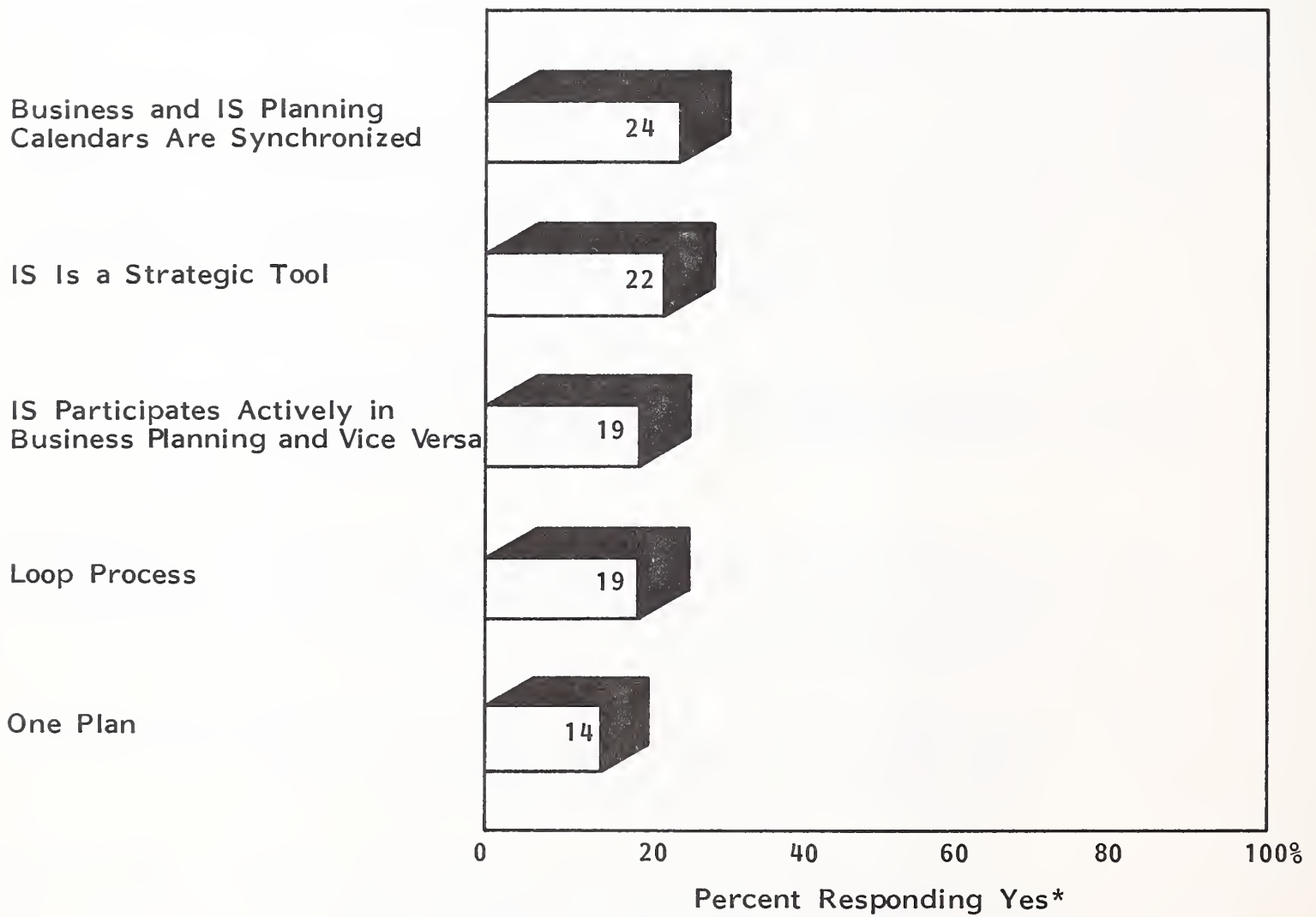
- At one company, a reduction in staff, particularly middle-level management, was achieved by developing information systems that allowed for the same level of control as business grew.
- The information systems were achieved through system design of joint IS and line management personnel.
- Finally, an integrated IS and business plan aids management in meeting goals. A plan for human, financial, plant, and system resources includes all the components for which management at the lowest level should be accountable. Planning keeps companies on track.

C. DEFINITION AND CHARACTERIZATION

- The definition of integrated IS and business planning is elusive. For many of the survey respondents, integrated planning was easier to characterize in terms of process and products.
- Exhibit III-4 lists the variety of definitions and characterizations given by respondents who had an integrated plan or process.
 - The business planning and IS planning calendars are synchronized. While this is required for integrated planning, more is still needed to achieve fully integrated planning.
 - IS becomes a strategic tool. IS provides for flexibility no matter what business direction is taken. IS provides tools to serve clients better and inform management about significant cost advantages. IS actually

EXHIBIT III-4

DEFINITIONS AND CHARACTERIZATION OF INTEGRATED PLANNING



* Multiple responses possible

becomes a product or directly contributes to a service and is acknowledged for its direct contribution. This is the best characterization of integrated planning.

- IS personnel participate actively in business planning or vice versa. In this case there are separate business and IS plans. INPUT believes this is perhaps more appropriately called linked planning rather than true integrated planning.
 - Integrated planning is a "loop process." The system plan (which can either be a physical part of the business plan or a separate document) is conceived while developing the business plan. It is a "marrying process" whereby the business plans allocate resources to IS and the IS plan allocates resources to the business units. The IS plan actually fulfills the business plan tactically, but also partially directs the business plan in terms of future financial resource requirements.
 - One business plan is the result of integration and includes IS as part of the operating budget. In all surveyed companies that had a plan, the business plan contained enough information so that an application development priority scheme could be established.
- Several respondents who said they had integrated their IS and business plans stated that the business plan was the basis for IS planning. INPUT believes that this is still reactive planning, rather than proactive planning (which is a primary characteristic of integrated planning).
 - Reduced costs, increased revenue, more effective resource use, and management accountability appear to be the results of integrated planning and the acceptance of IS as a contributor to the organization.
 - Open communication between general management, line management, and services management (including IS) is common among those companies with integrated planning.

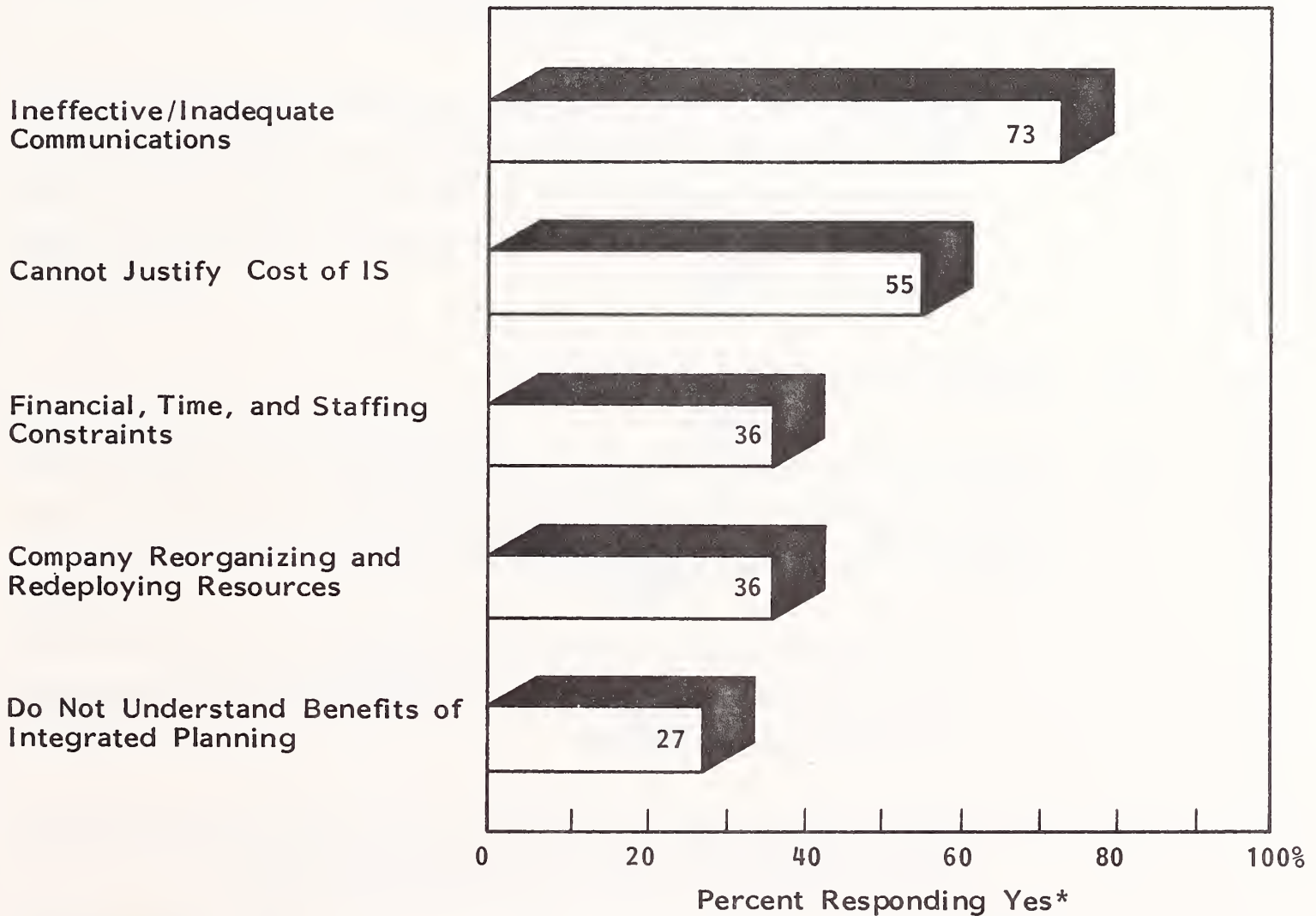
D. WHY DON'T COMPANIES INTEGRATE AND WHAT ARE THE RESULTS?

I. IMPEDIMENTS TO INTEGRATING PLANNING

- Exhibit III-5 lists the reasons or impediments given by respondents who did not have integrated planning.
 - Ineffective/inadequate communications was most frequently cited.
 - This reason includes lack of downward communication from general management as to direction, and lack of communication between IS and users.
 - At one company the lack of downward communication was attributed to top management's belief that some activities should be kept secret for strategic reasons. There is a lack of horizontal communication because line management feels that IS does not understand the business and because IS feels the user does not understand the potential of technology. It is quite clear, however, that the onus is on IS to understand the business requirements.
 - In six companies, even though there were extensive information resources, management did not feel that these resources were justified or felt that no measurable return on investment had resulted from IS acquisitions. IS showed poor accountability.
 - In the companies with serious economic problems (seven respondents alluded to these), management was not willing to invest financial and staff resources for an integrated planning process.
 - Some companies were reorganizing and redeploying resources. One company was recently acquired and had new management.

EXHIBIT III-5

IMPEDIMENTS TO INTEGRATED PLANNING



* Multiple responses possible

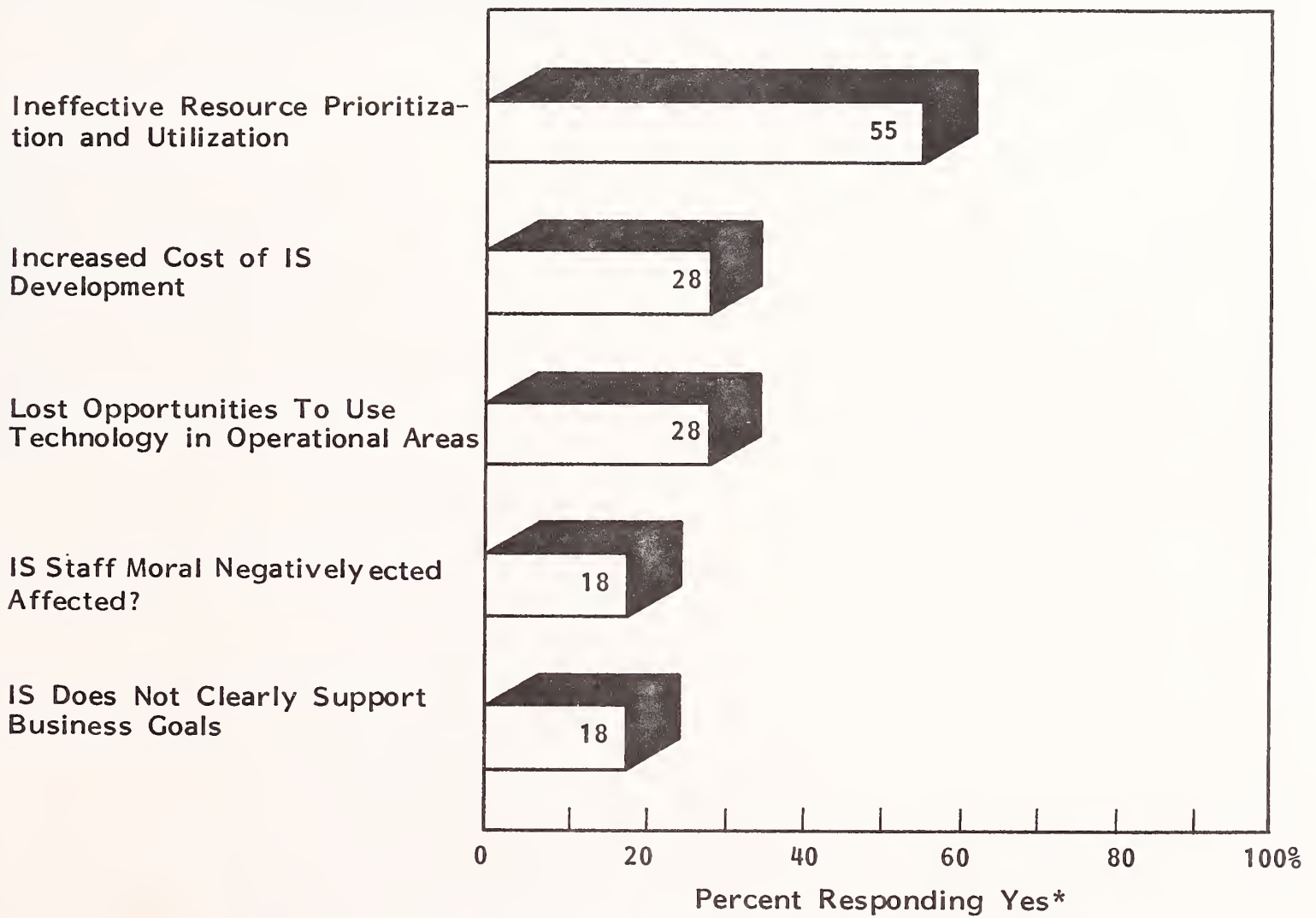
- . One was experiencing an exceptionally high growth rate and much of the resources were being diverted to advertising and promotion.
- . Two were in the process of distributing IS to the line operations. (Note: This last seems to be a precursor to achieving integrated IS and business planning.)
- In several cases general management or business planners do not understand the benefits of integrated planning (which also means they do not understand the benefits of IS). In these cases there will be no push from the business units to integrate planning; it will have to be initiated by IS.

2. RESULTS OF NOT INTEGRATING

- Those companies without integrated planning mentioned the following results of not integrating. Exhibit III-6 summarizes these results for the 11 companies that were without integrated planning.
- Both IS and general management respondents felt that not having integrated planning resulted in ineffective IS resource use and mediocre data processing support.
- Costs of IS development increased because of duplicate efforts (particularly with respect to personal computer applications).
- IS management felt strongly that the company was not taking advantage of advanced technology in operational areas. (These managers were from companies with scarce financial resources.)

EXHIBIT III-6

RESULTS OF NOT INTEGRATING



* Multiple responses possible

- IS staff morale was negatively affected. IS staff felt that their company was not keeping up with the competition. They felt they were being "jerked around" and forced to be reactive, not proactive. Several examples of acquisitions were given in which IS was told after the fact and could not adequately or quickly respond to the new volume.
- General management stated in two cases that IS seemed to just want to "do their thing," as opposed to supporting business goals.

INTEGRATING SYSTEMS AND CORPORATE PLANNING

CONTENTS

	<u>Page</u>
I INTRODUCTION.....	I
A. Objective, Audience, and Need	I
B. Scope	2
C. Methodology	4
D. Report Organization	4
II EXECUTIVE SUMMARY	7
A. Definition, Benefits, and Impediments	7
1. Definition of Integrated Planning	7
2. Benefits of Integrated I.S. and Business Planning	8
3. Impediments to Integrated Planning	10
B. How to Convince Top Management	11
C. Participants and Resources Needed	11
D. Use of Traditional I.S. Methodologies	12
E. Keys to Success	13
F. Documentation	15
G. Recommendations	15
III THE NEED AND THE IMPEDIMENTS	23
A. Why Plan Information Systems?	23
1. Background	23
2. Issues	25
B. What Are the Benefits of Integrated I.S. and Business Planning?	28
C. Definition and Characterization	31
D. Why Don't Companies Integrate and What Are the Results?	34
1. Impediments to Integrating Planning	34
2. Results of Not Integrating	36
IV HOW TO INTEGRATE PLANNING EFFORTS.....	39
A. How to Convince Top Management	39
B. Who Should Participate in Integrated Planning?	43
C. What Are the Required Resources?	45
D. Can You Use I.S. Planning Methodologies?	46
1. Business Systems Planning Methodology	48
2. Critical Success Factors	50
E. What Works?	51
1. Keys to Success	51
2. The Planning Process	56
a. Process Variables	56
b. Process Steps	56

	<u>Page</u>
V DOCUMENTATION OF INTEGRATED PLANNING	65
A. The Plan	65
1. A Single Plan	66
2. A Separate I.S. Plan	67
B. I.S. Annual Report	67
C. I.S. Guidelines for Line Managers	70
VI CONCLUSIONS AND RECOMMENDATIONS	73
A. Conclusions	73
B. Recommendations	75
C. Caveats	78
APPENDIX A: RESPONDENT SUMMARY	79
APPENDIX B: RESOURCES	83
APPENDIX C: I.S. STRATEGIC PLAN OVERVIEW	85
APPENDIX D: I.S. ANNUAL REPORT.....	97
APPENDIX E: QUESTIONNAIRE	101

INTEGRATING SYSTEMS AND CORPORATE PLANNING

EXHIBITS

		<u>Page</u>
III	-1 Issues Identified by Business Planners	26
	-2 Issues Identified by I.S. Planners	27
	-3 Benefits of Integrated Planning	29
	-4 Definitions and Characterization of Integrated Planning	32
	-5 Impediments to Integrated Planning	35
	-6 Results of Not Integrating	37
IV	-1 How to Convince Top Management	41
	-2 Integrated Planning Participants and Roles	44
	-3 Methodologies Used	47
	-4 The Three-Level Impact of I.S.	52
	-5 Planning Horizons	57
	-6 Planning Steps	58
V	-1 Company ABC's I.S. Strategic Plan	68
	-2 I.S. Planning Guidelines	71
A	-1 Respondent Industry and Planning Profile	80
	-2 Respondent Position Profile	81
C	-1 Four-Level Planning Model	86
	-2 System Strategic Model	91

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I INTRODUCTION

I INTRODUCTION

- This report is part of INPUT's Information Systems Program (ISP). It describes approaches to achieving an integrated information system (IS) and corporate business planning process such that the full benefits of information technology can be achieved. It describes the needs, impediments, methodologies, and results of an integrated planning effort. It recommends integration approaches, plans, and other documentation contents reflecting an integrated approach.

A. OBJECTIVE, AUDIENCE, AND NEED

- The objective of this report is to assist systems and planning management to integrate IS with the corporate business plan in order to achieve the fullest benefits of information technology application. It will:
 - Discuss methodologies used by companies with integrated planning.
 - Discuss integrated planning benefits.
 - Identify methods of approaching and implementing integration.
 - Recommend plan documentation approaches.

- This report will be of interest to the following people:
 - IS management.
 - IS planners.
 - Corporate business planners.

B. SCOPE

- The research for this report focused on the following:
 - The needs and benefits of integrated systems and business planning.
 - The impediments, reasons for, and results of not integrating.
 - How to integrate planning efforts in terms of:
 - How to convince top management.
 - Required resources.
 - Traditional IS planning methodologies.
 - Integrated planning approaches.
 - The formal and informal documented results of the integrated planning effort.
- This report excludes:

- In-depth discussion of specific industry directions.
- In-depth discussion of business planning.
- Planning is discussed from the following perspectives:
 - Generic systems planning with no rigorous distinction between strategic, long-range, or tactical planning.
 - Planning from the corporate IS perspective rather than from decentralized IS perspectives.
- This report addresses the following major issues:
 - How can the IS function be a complement and enhancement to the business?
 - What are the definition and characteristics of integrated IS and corporate planning?
 - What are the benefits of the integration of IS and corporate business planning?
 - What are the impediments to integrated planning?
 - What are the resources needed to perform integrated planning?
 - Who should be involved in integrated planning and what are their roles?
 - How can one get top management's approval?
 - Is there a methodology for integrating IS and business planning?

- Should integrated planning requirements be rigid (structured and formal) or flexible?
- What are the formal and informal planning documents related to an integrated planning process?

C. METHODOLOGY

- The information for this report was gathered from the following sources:
 - Thirty-seven interviews with IS management, IS planners, business planners, or general management in 33 companies with over 1,000 employees (see Appendix A).
 - All of these companies had an IS plan and a business plan.
 - Twenty-four of these companies stated they had an integrated IS and business plan and planning process.
 - Review of secondary research from INPUT's extensive information resources.
 - The questionnaire is contained in Appendix E. Different questions were asked depending on whether or not the respondent stated that the company had an integrated plan.

D. REPORT ORGANIZATION

- The remainder of the report is organized as follows:
 - Chapter II is an executive summary.

- Chapter III describes planning issues, the definition and characteristics of integrated planning, the benefits of integrated IS and business planning, and the major impediments.
- Chapter IV describes how to integrate planning efforts in terms of how to convince top management, the keys to success required prior to attaining integrated planning, the participants and resources required, traditional planning methodologies, and an integrated planning approach.
- Chapter V describes documentation of the planning process - a single plan, a separate IS plan, the IS annual report, and guidelines for line managers to use when completing their systems plan input.
- Chapter VI contains conclusions, recommendations, and caveats on integrated planning.
- Appendix B contains a list of resources - books and seminars - identified by respondents as useful in promoting an integrated planning approach.
- Appendix C is a sample of a company strategic plan.
- Appendix D contains a sample IS annual report.

II EXECUTIVE SUMMARY

II EXECUTIVE SUMMARY

- Ours is an age of uncertainty with an evolving economy and an uncertain future. The new environment will require that companies have highly efficient operations, marked by the integration and application of technology.
- The information systems (IS) resources are strategic tools and can assist companies in meeting uncertainty. IS management must realize that they are agents of change due to the information technology explosion, and should place themselves in a position to plan and contribute to how changes will take place.

A. DEFINITION, BENEFITS, AND IMPEDIMENTS

I. DEFINITION OF INTEGRATED PLANNING

- Integrated IS and business planning can be characterized in terms of the planning process and of the documented results.
 - Integrated planning is a "loop process" or a "marrying process" whereby the business plan allocates resources to IS and the IS plan allocates resources to the business units. The IS plan fulfills the business plan tactically, but also partially directs the business plan in terms of future financial resource requirements.

- The resultant plan may be one business plan that includes IS as a part of it or there may still be a separate IS plan. In either case, the plan serves as a document against which IS progress can be monitored.
- The acceptance of IS as a strategic tool is a primary characteristic of integrated planning. At this point IS gains equal footing with financial, human, and facilities resources.
- Open communications between general management and line and service management, including the IS function, is common among companies with integrated planning. General management communicates business direction and objectives, and functional units (such as IS) communicate how they can contribute to meeting objectives.
- IS personnel participate actively in the planning of operational units and line management, and staff contribute to the development of IS project plans.
- The planning calendars of business units and IS are synchronized. With all lines reporting at the same time, IS is accepted as an equal contributor to the company's success.

2. BENEFITS OF INTEGRATED I.S. AND BUSINESS PLANNING

- IS clearly supports business goals and objectives, for example, by providing better customer service with more current information, or by improving the productivity of managerial and professional staff with IS augmentation.
- Costs of both business operations and IS can be reduced, for example, by reviewing plans from line management and distributed IS that identify all system needs. The goal is to reduce redundant system acquisition or redundant system development by multiple-end-user departments.

- Actual payback of IS investments is possible.
 - In one INPUT survey respondents reported that their business plan stated an objective of becoming a more focused manufacturer and the result was divestitures and acquisitions.
 - IS was called in by general management to review an acquisition candidate. IS determined that existing manufacturing and financial systems at headquarters could accommodate the load of new products and plant control necessitated by the acquisition.
 - Headquarters was able to accommodate the administrative load and eliminate the administrative systems of the acquisition candidate. They determined there would be a savings of personnel and equipment as a result of this consolidation. With IS assistance, the profit to the company was \$20 million.
- Better resource utilization is possible. More appropriate priorities for human, financial, plant, and system resources can be established.
 - At another company in the INPUT survey, a reduction in staff, particularly middle-level management, was achieved by developing information systems that allowed for the same level of control as business grew.
 - Information systems were developed through system design of joint IS and line management teams.
- The plan can be used as an aid to ensure accountability in meeting goals and objectives. An integrated plan for human, financial, plant, and system resources includes all the components for which management at all levels should be accountable. Planning and subsequent monitoring keeps companies on track.

3. IMPEDIMENTS TO INTEGRATED PLANNING

- Ineffective/inadequate communication is the most critical impediment to integrated planning. Lack of downward communication from general management as to direction inhibits IS in its attempts to contribute fully. Inadequate horizontal - line-to-function - communication also contributes. For example, line management feels that IS does not understand the business, and IS feels that the user does not understand the potential of technology.
- Another impediment occurs when IS is unable to show a return on IS investments, or does not meet the budget and schedules. Management does not wish to include IS in plans if IS has not shown it is accountable to top management for its own resources.
- Integrated planning is difficult to achieve during times of reorganization or redeployment of resources. For example, many companies have been distributing IS to the line functions. While this seems to be a precursor to achieving integrated IS and business planning, there is too much turmoil to achieve both at the same time. The move to integrated planning should follow the distribution of IS to line operations.
- The final impediment to achieving integrated IS and business planning occurs when top management does not understand the potential of IS as a strategic resource. If management sees IS as a drain on resources rather than an actual contributor to fulfilling strategies, integrated planning will be difficult to achieve. (This is a chicken-and-egg situation: if IS is seen as a strategic tool, integrated planning can be achieved, but if there is integrated planning, IS can become a strategic tool.)

B. HOW TO CONVINCE TOP MANAGEMENT

- Top management's blessing is required to initiate and support integrated planning.
 - Top management does not always need convincing - they are often the instigators of approaches that promote the effective use of IS.
 - However, professional IS management that consistently and articulately educates management as to how IS can become a strategic tool assists in convincing not only top management, but line management as well.
- In the INPUT survey of 33 companies, several companies came to integrated planning after a bad experience, but if IS had been included in the determination of business direction, the bad experience could have been avoided.
- However, if nothing is done, eventually the increasing computer literacy of staff will force top management to be more responsive to the company's IS needs and to promote the integration of IS as a strategic resource into the business through integrated planning.

C. PARTICIPANTS AND RESOURCES NEEDED

- There is a wide cast of participants needed for integrated planning. The general management sets overall direction. IS and line management set functional and business directions, but each must contribute to the other's process. The IS and business planners perform studies in support of planning efforts and also consolidate planning efforts to achieve benefits of reduced redundancies and to identify common issues that can be addressed jointly or at a corporate level.

- Resources are available to assist in achieving integrated planning, in the form of consultants, books, and seminars (see Appendix B - Resources).

D. USE OF TRADITIONAL I.S. METHODOLOGIES

- Traditional IS planning methodologies, such as IBM's Business Systems Planning (BSP) or Critical Success Factors (CSF), are appropriate for first-time IS planning efforts. These offer a structured approach to planning.
 - These methodologies are not necessarily intended to promote integrated planning.
 - In the INPUT survey, companies with integrated planning had used a variety of approaches, such as BSP and CSF, for first-time planning, but for integrated planning most had an internally developed methodology (IDM) that was a more adaptive approach.
 - The IDM will vary in terms of structure and flexibility and will depend on the company's structure, corporate culture, and management style.
- Some of the INPUT survey respondents were using an approach from an IS consulting firm called "IS Strategic Planning Process." While formal and structured, the approach promotes both ongoing and integrated planning.
- There is a high degree of user and IS interaction and of feedback and looping. Corporate and middle management are called upon to identify critical business activities, review a future logical model of the business, develop and approve the IS strategic plan, and select promising new technologies.

- The experiences of these respondents show that general and line management and IS personnel are working much more closely and synergistically, a key to integrated planning as a result of adopting this formal and structured approach.

E. KEYS TO SUCCESS

- The preconditions for integrated planning are:
 - Accountability - IS consistently meets budget and schedule commitments. IS reports on its accountability in status meetings, or formally through a document such as the IS annual report.
 - Distribution of IS - IS, perhaps along with finance and human resource functions, is distributed to the divisions to be supported, thereby embedding IS functions into the line operations. This allows IS to better serve end users and promotes better understanding of the potential of IS.
 - IS is seen as a strategic tool - management knows how to assess the competitive impact of information technology. They see that information technology has an impact at the industry, firm, and strategy levels.
 - Open communications - both vertical and horizontal communication channels are open. Top management and successive layers communicate on business directions, and communication across functions is easy (IS to end users and vice versa).
 - Top management supporter - there is a sponsor to sell the integrated planning approach and to carry it out. A sponsor who has had a positive experience with IS can be found in the business unit.

- Planning calendars are synchronized - IS and business unit management prepare their plans at the same time and feed each other.
- The companies in the INPUT survey appeared to go through a series of phases prior to achieving an integrated planning process.
 - Initially, there was no IS plan.
 - IS plans to use BSP or some other methodology that begins by stating business objectives and captures the requirements of business management. IS is reactive, but responsive to business requirements.
 - IS achieves accountability - consistently meeting budget and schedule - and begins to publicize or in some way communicate their accomplishments and further potential as a strategic tool.
 - IS is distributed closer to user management. This act further serves to cross-educate IS and user organizations about each other's capabilities and needs. There is still a corporate IS function that defines policies and guidelines for IS resources.
 - Corporate IS issues guidelines to distributed IS management for working with user management to prepare IS plans for the distributed IS activities. Corporate IS consolidates the results and identifies redundancies, if any, and addresses common issues.
 - Corporate IS and distributed IS both issue guidelines and communicate with business management on how to prepare the IS portion of the business plan. The resultant business plan includes a discrete system plan section for each line manager. Corporate IS and/or business planners consolidate the results and identify redundancies and common issues.

- The business plan reflects systems, as well as capital, human resources, and facilities. Each resource is considered to have equal strategic importance. A separate IS plan may still exist as a basis for comparison.

F. DOCUMENTATION

- The documented results of the planning process do not determine whether a company has integrated planning. There can be one single integrated plan or IS can still have a separate plan.
 - The documentation should reflect that IS is considered a strategic resource, just like capital, human resources, and facilities.
 - The documentation should serve as a tool for monitoring progress.
- In the INPUT survey, 10 companies had a single plan, but in addition they had application development priority lists and key project plans (networking, data base, and personal computing extensions).

G. RECOMMENDATIONS

- The onus is on IS to show a better understanding of its function within the organization. IS can begin by understanding the issues of the business and defining their own issues in business terms rather than technological terms. Issues held in common are much easier to address jointly through integrated planning.

- It is also up to IS to show how IS can be a strategic tool. IS can begin by looking at past business decisions that might have had a more profitable outcome if IS had been involved in the planning.
- In order to convey the strategic nature of IS, IS must play a consulting role. IS management is in the best position to tout the strategic nature of IS in management meetings.
- IS management and planners can use a three-level framework to trigger their thinking about the potential impacts of IS at the industry, firm, and strategy level.
 - Management must anticipate the impact of IS at the industry level before it occurs, so that strategies can be developed to position the organization in the new industry setting.
 - For example, teleconferencing, if used as a substitute for travel, will have a significant impact on the transportation industry's business travel market. Management must look at the impact of information technology over the next five to ten years on:
 - Products and services.
 - Markets.
 - Production economics.
 - At the firm level, management must assess the impact on the following competitive forces:
 - Buying power.
 - Supplier power.

- Product substitution economies.
 - New entrants.
 - Rivals.
- At the strategy level, companies position themselves relative to their industry by effectively implementing one or more generic strategies, and IS can affect the ability of the organization to execute these strategies, some of which are:
 - Low-cost leadership.
 - Product differentiation.
 - Concentration on market or product niche.
- Documents such as the IS annual report are a way to show that IS understands the business and a way to show accountability. A document should be developed that shows how IS can and does assist in meeting business objectives and acts (or can act) as a strategic tool. The statement should consist minimally of the IS mission, strategies, and issues that are deemed to be of importance to effective business operations (see Appendix D - IS Annual Report Sample).
- In order to learn the business, IS should either develop the business strengths of existing IS employees, tap into line units for business expertise, or hire employees with technical, planning, and business experience. The resources of consultants, books, and seminars listed in Appendix B can also be used. This should be in addition to distributing IS staff closer to line operations.

- IS will need to publicize or communicate guidelines to line management the first few times they are asked to address system planning in their planning efforts. These guidelines should be developed jointly with line management representatives, or at least "signed off" by line or general management. Guidelines should be short and easy to complete. For example:
 - Briefly discuss the systems environment.
 - Outline systems plan in terms of objectives, scope, and a summary of major projects and other actions. Explain how the systems plan supports the business strategy and business plan. Discuss the compatibility of the systems plan with the IS strategies of the company as a whole.
 - Highlight progress during the past year.
 - Review any changes in emphasis or priorities.
 - Identify problems which arose.
 - Discuss the major systems issues in the priority sequence that will be addressed during the coming plan period.
 - Discuss any related areas of concern, such as issues needing senior management guidance or involvement, or problems that may be common to other organizations.
- The results of line management planning efforts should be consolidated and common systems issues identified. If there are any plan redundancies, the involved parties must be made aware of their duplicate efforts, and negotiations promoted to reduce such efforts.

- The degree of formality, the planning horizons to be covered, and the documentation of results are dependent upon corporate culture and the resources brought to bear (staff, money, consultants, and other outside resources).
- The actual approach should consist of the following steps:
 - First the scope of the effort should be defined. The key participants in this step make up the planning support team, consisting of those who request, review, and/or consolidate plan results.
 - During the preparation phase the planning support team should perform activities to prepare themselves for their role in educating user management. An "IS potential" paper can be prepared and used by the support team to promote the idea of IS as a strategic tool. Discussions on the potential of IS should be held with line management prior to the beginning of their planning efforts.
 - During the identification of issues, goals, objectives, and critical success factor stage, those aspects that are providing the impetus behind plans must be defined. This must be done by each line manager, either alone or in key-manager brainstorming sessions. Results should be shared.
 - An assessment of the current situation in each line operation or support function will be necessary to serve as the baseline for the planning effort.
 - Descriptions of opportunities and needs from an assessment phase are necessary. IS management and/or business planners may need to consolidate the results of this step and report back to line managers on any opportunities or needs held in common.

- The opportunities and requirements must then be evaluated and priorities set. The results should be communicated back to all line managers, and negotiations for change should be possible.
- In the plan formulation step, documentation should be prepared that is appropriate to the planning activity - strategic, capital, or operating/budget - and appropriate to the need for formality or informality.
- The IS and business planners may need to consolidate plans from the various operational units and identify redundant efforts and common issues to be addressed at a corporate level. The final result should be a document to which management at every level can be held accountable.
- There are several caveats that must be considered in developing an integrated planning approach.
 - The timing of efforts to achieve integrated planning is critical. If there are reorganizations or other distracting and draining events occurring, the time is not right.
 - A top management sponsor outside of IS is probably needed. IS usually does not have the clout by itself. The sponsor can be found in the division that has been satisfactorily served by IS and which has achieved some goal through IS (for example, significant cost reduction or revenue enhancement).
 - Consider using a consultant, particularly to sell executive management on the idea of IS as a strategic tool. A consultant may offer the necessary objectivity and "seal of approval."
 - IS and business planners should publish and communicate their results widely, both vertically and horizontally.

- Communication of directions and the exchange of needs and potential opportunities lead to shared understanding and will ensure that companies make the best use of their resources - IS and others. The planning process can provide stimulating discussion and the exchange of insights between IS and user management.

III THE NEED AND THE IMPEDIMENTS

III THE NEED AND THE IMPEDIMENTS

- Ours is an age of uncertainty, with an evolving economy and an uncertain future. But managers must still forge a path of action in a viable direction. The new environment will require highly efficient operations, marked by the integration and application of technology. One must continually adapt and infuse the latest technologies and build upon the technological infrastructure, providing information and information handling services where and when needed.
- These IS resources are, in fact, strategic tools in that they can assist companies in implementing strategies. And for some companies IS can even become a direct part of products and services. But how does one plan in a dynamic environment? The key is to use the capabilities of all functions within a company, including IS, and to promote communication between functions so that all are aware of each other's potential.

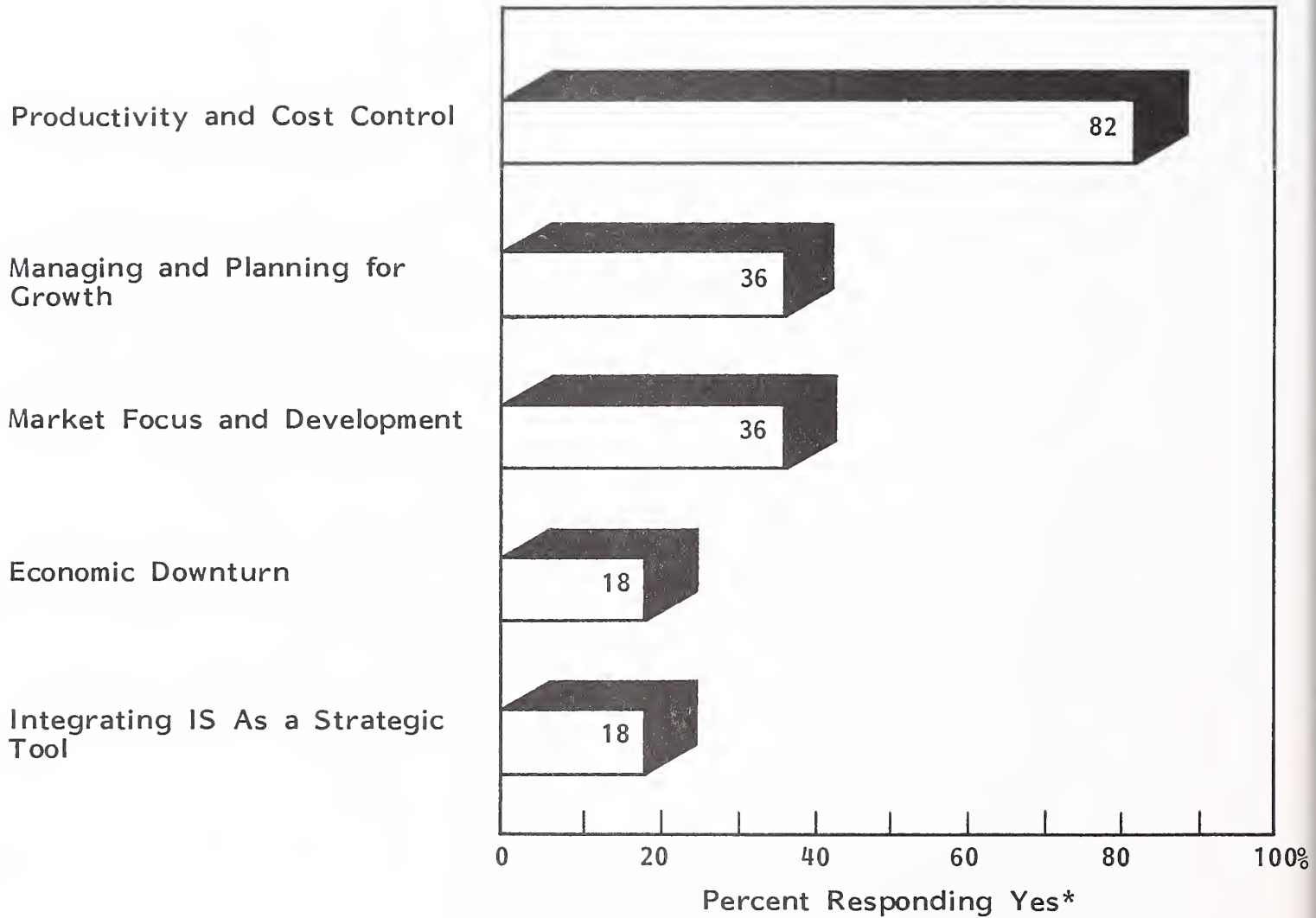
A. WHY PLAN INFORMATION SYSTEMS?

I. BACKGROUND

- The primary objective of each function within an organization, including IS, is to contribute to the ability of the organization to make a profit. In order to do this, the IS manager must at a minimum create an operation that provides

EXHIBIT III-1

ISSUES IDENTIFIED BY BUSINESS PLANNERS



* Multiple responses possible

- The use of IS in banking is a clear example of how IS activities are strategic in nature. There must be integrated planning in which the general management of the corporation, the line management of revenue operations, and the management of service functions (including IS) all participate.

2. ISSUES

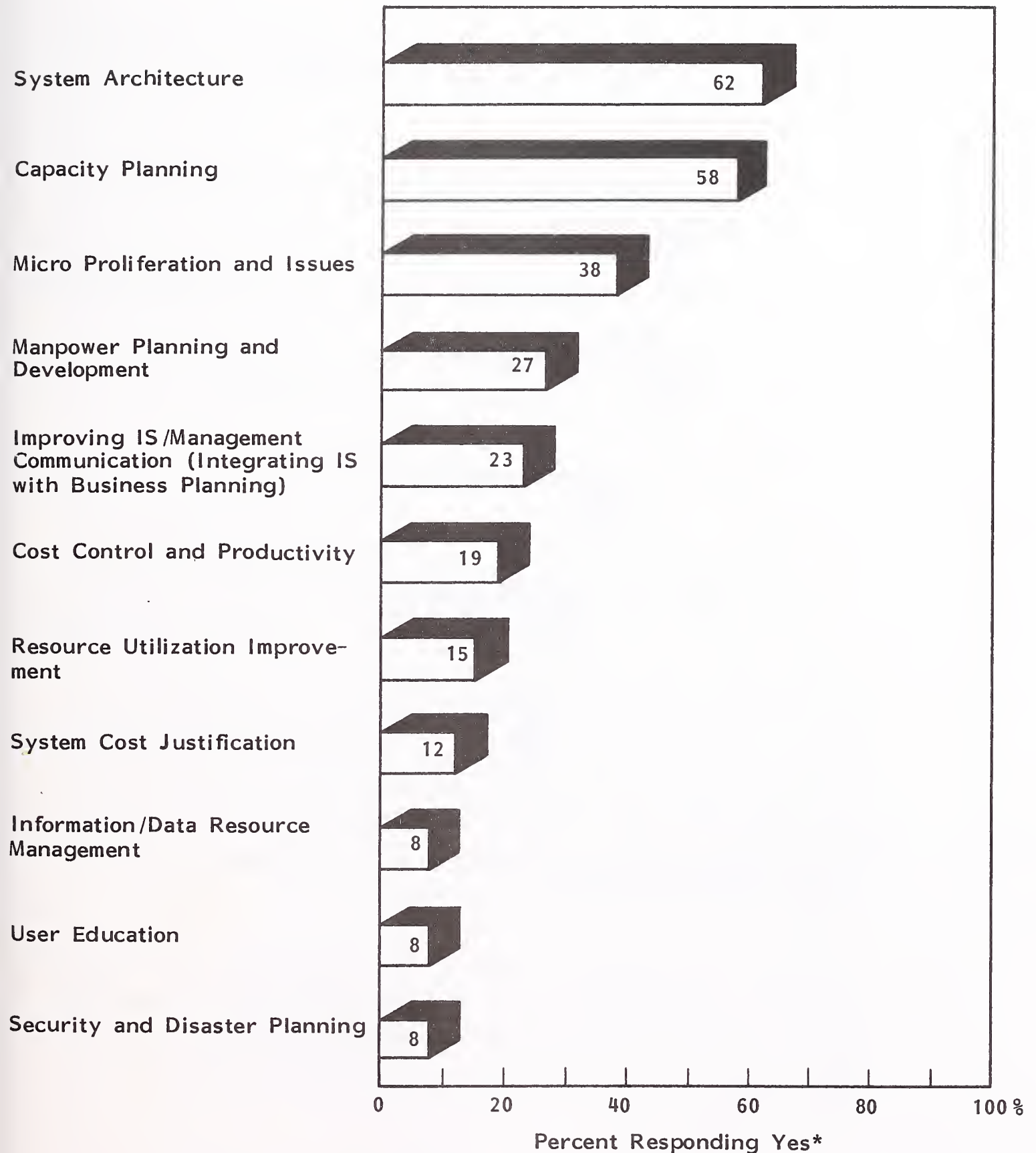
- The business planners and general management level respondents identified the issues listed in Exhibit III-1 as those being addressed in their current planning efforts.
- Generally, there was more interest in cost control than in business expansion. Companies in a business expansion mode were more inclined to see IS as a competitive weapon. (It may be that IS can only be considered a strategic tool if a company is in the expansion mode, and the capital to enhance IS is available.)
- IS planners and general-management-level respondents identified the issues listed in Exhibit III-2 as those driving their current planning efforts. From the list of IS issues it is clear that IS issues are predominantly technological in nature.
- The only issues clearly held in common were productivity, cost control, and integrating IS as a strategic tool, although the latter was not of primary importance. It would seem that issues held in common would be a driving force for integrated IS and business planning.
- While IS management and planners would argue that their issues stem from business issues, it is interesting to note that they do not articulate the driving business issues, but rather the resultant technological issues. It would perhaps be advisable for IS personnel to show their understanding of their function within the organization by tying technological issues directly to business issues.

B. WHAT ARE THE BENEFITS OF INTEGRATED I.S. AND BUSINESS PLANNING?

- Exhibit III-3 lists benefits achieved in companies with an integrated plan.
- IS clearly supports business goals. Examples were given of better customer service with more current information, more new lines of business developed, and more users promoting their own productivity by using information technology as a tool. The overall needs and capabilities of the corporation were made more apparent through integrated planning efforts. The company was more able to take advantage of technology in terms of competitive positioning.
- There were reduced costs of both IS and business operations.
 - Redundant system acquisition was avoided through planning and coordination.
 - IS development efforts were better scoped. Greater understanding of requirements was achieved via study by both IS and line personnel participants.
 - At one company, IS was decentralized and work was spread to smaller systems at less cost than if the work was done on corporate headquarters' centralized systems.
- Eleven of the respondents stated that they had achieved a specific payback as a result of integrated planning. (Note that most of the companies would not report their specific payback because they were concerned that it would divulge their strategies.)

EXHIBIT III-2

ISSUES IDENTIFIED BY I.S. PLANNERS



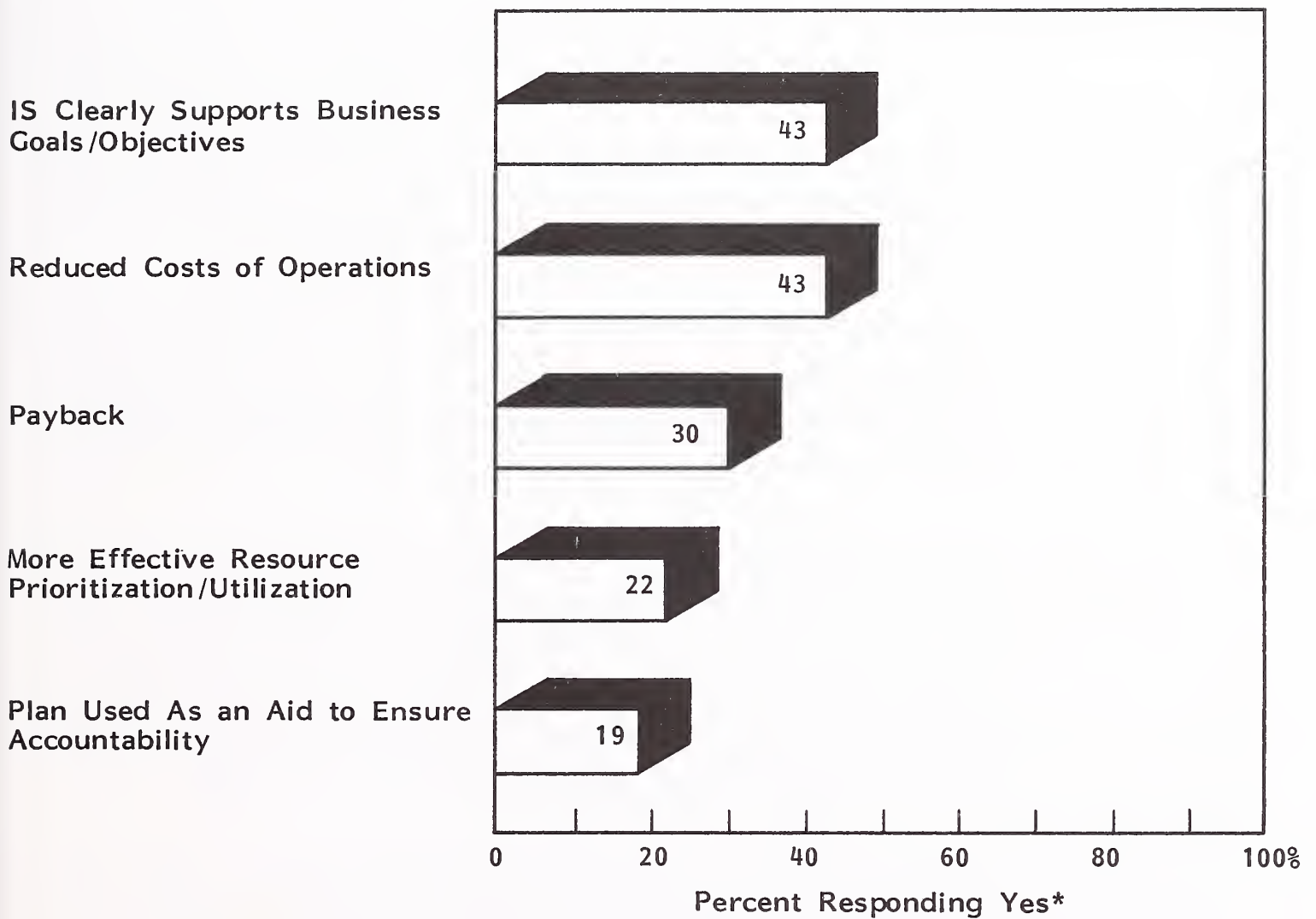
* Multiple responses possible

the necessary services for the minimum cost that is consistent with being able to meet the evolving needs of the overall organization.

- Typically IS is considered to be a service for the organization. Planning has been isolated from the IS functions and has been generally in a short-range, adaptive mode because:
 - There are rapid changes occurring in hardware, software, and communications technology.
 - There is a high rate of personnel turnover in IS, resulting effectively in a scarcity of skilled personnel.
 - There is a scarcity of financial and managerial resources.
 - There are constant changes in system requirements.
 - There are frequent and unexpected user demands, due to activities such as new marketing programs, new product design, legal and regulatory changes, and competitive environment shifts.
- IS management must realize that, due to the information technology explosion, they themselves are also the agents of change and should be in the best position to plan or contribute to change. For example, in insurance companies there is growing belief that expert systems will reduce the need for skilled, highly paid underwriters. This implies increases in technological investment and utilization, profound human resources changes, and changes in the profit picture. Planning for these changes is mandatory.
- IS activities clearly represent an area of great strategic importance in some companies. One respondent to our survey said that "IS is a competitive weapon." IS needs the guidance of corporate goals, but the achievement of these goals can be severely affected by IS performance and capabilities, or the lack thereof.

EXHIBIT III-3

BENEFITS OF INTEGRATED PLANNING



* Multiple responses possible

- In one case the business plan called for more focus, and the result was divestiture and acquisition activity.
 - IS was called in by general management to review an acquisition candidate. IS determined that existing manufacturing and financial systems at headquarters could accommodate the load of new products and plant control necessitated by the acquisition.
 - Further, headquarters was about to take on the administrative load and eliminate the administrative systems of the acquisition candidate. Headquarters determined there would be a savings of personnel and equipment as a result of this consolidation. With IS assistance the profit to the company from the acquisition was \$20 million.
 - In another case the company computerized the management of its timberland base. This led to smarter decisions about growing trees and was largely responsible for an improvement of over 30% in timber yield over the last few years.
 - Another company said that their market share increased from 23% to 30% over the last three years because of the value added to their customers as a result of offering information services in addition to products and product distribution services. They were also able to lower operating costs as a result of IS. These benefits were achieved through joint IS and business planning.
 - Yet another company attributed nine years of continuing growth to IS and the open communications between all units, including IS and general management.
- Better resource utilization was identified as a benefit of integrated planning. More appropriate priorities for human, financial, plant, and system resources were established. Specifically, there was better teamwork, and a balance was

reached between product/market development and human development as a result of information systems.

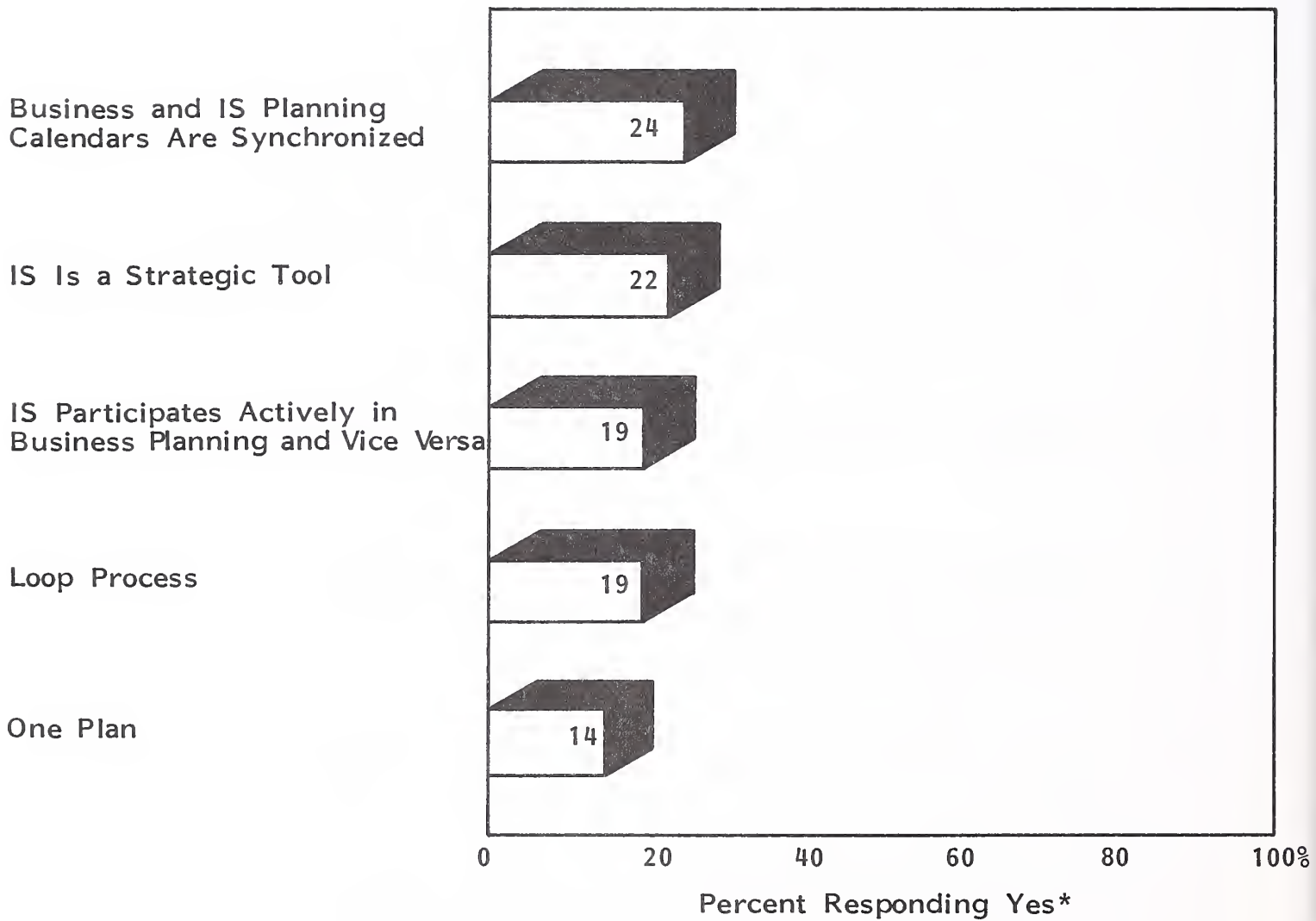
- At one company, a reduction in staff, particularly middle-level management, was achieved by developing information systems that allowed for the same level of control as business grew.
- The information systems were achieved through system design of joint IS and line management personnel.
- Finally, an integrated IS and business plan aids management in meeting goals. A plan for human, financial, plant, and system resources includes all the components for which management at the lowest level should be accountable. Planning keeps companies on track.

C. DEFINITION AND CHARACTERIZATION

- The definition of integrated IS and business planning is elusive. For many of the survey respondents, integrated planning was easier to characterize in terms of process and products.
- Exhibit III-4 lists the variety of definitions and characterizations given by respondents who had an integrated plan or process.
 - The business planning and IS planning calendars are synchronized. While this is required for integrated planning, more is still needed to achieve fully integrated planning.
 - IS becomes a strategic tool. IS provides for flexibility no matter what business direction is taken. IS provides tools to serve clients better and inform management about significant cost advantages. IS actually

EXHIBIT III-4

DEFINITIONS AND CHARACTERIZATION OF INTEGRATED PLANNING



* Multiple responses possible

becomes a product or directly contributes to a service and is acknowledged for its direct contribution. This is the best characterization of integrated planning.

- IS personnel participate actively in business planning or vice versa. In this case there are separate business and IS plans. INPUT believes this is perhaps more appropriately called linked planning rather than true integrated planning.
 - Integrated planning is a "loop process." The system plan (which can either be a physical part of the business plan or a separate document) is conceived while developing the business plan. It is a "marrying process" whereby the business plans allocate resources to IS and the IS plan allocates resources to the business units. The IS plan actually fulfills the business plan tactically, but also partially directs the business plan in terms of future financial resource requirements.
 - One business plan is the result of integration and includes IS as part of the operating budget. In all surveyed companies that had a plan, the business plan contained enough information so that an application development priority scheme could be established.
- Several respondents who said they had integrated their IS and business plans stated that the business plan was the basis for IS planning. INPUT believes that this is still reactive planning, rather than proactive planning (which is a primary characteristic of integrated planning).
 - Reduced costs, increased revenue, more effective resource use, and management accountability appear to be the results of integrated planning and the acceptance of IS as a contributor to the organization.
 - Open communication between general management, line management, and services management (including IS) is common among those companies with integrated planning.

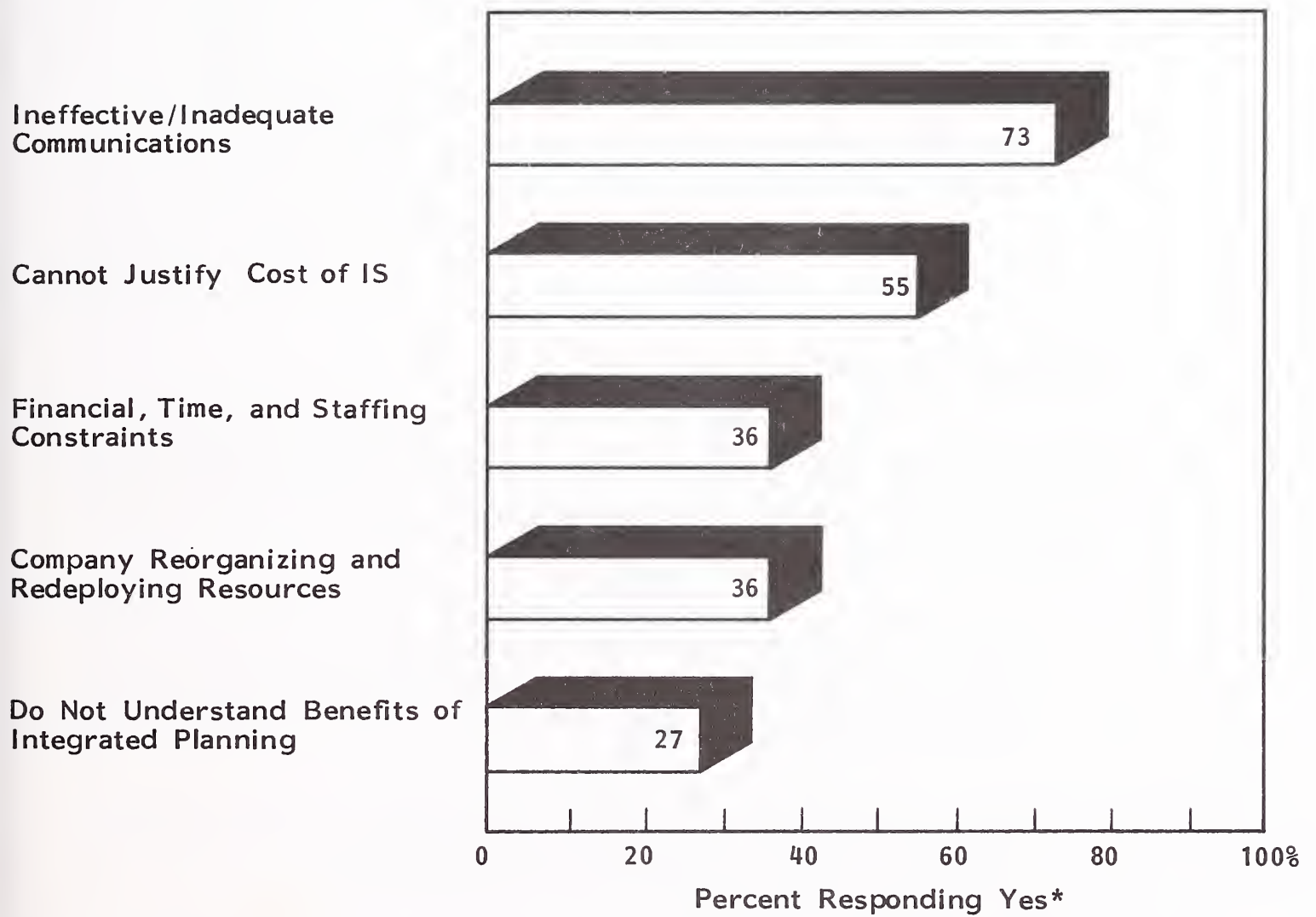
D. WHY DON'T COMPANIES INTEGRATE AND WHAT ARE THE RESULTS?

I. IMPEDIMENTS TO INTEGRATING PLANNING

- Exhibit III-5 lists the reasons or impediments given by respondents who did not have integrated planning.
 - Ineffective/inadequate communications was most frequently cited.
 - This reason includes lack of downward communication from general management as to direction, and lack of communication between IS and users.
 - At one company the lack of downward communication was attributed to top management's belief that some activities should be kept secret for strategic reasons. There is a lack of horizontal communication because line management feels that IS does not understand the business and because IS feels the user does not understand the potential of technology. It is quite clear, however, that the onus is on IS to understand the business requirements.
 - In six companies, even though there were extensive information resources, management did not feel that these resources were justified or felt that no measurable return on investment had resulted from IS acquisitions. IS showed poor accountability.
 - In the companies with serious economic problems (seven respondents alluded to these), management was not willing to invest financial and staff resources for an integrated planning process.
 - Some companies were reorganizing and redeploying resources. One company was recently acquired and had new management.

EXHIBIT III-5

IMPEDIMENTS TO INTEGRATED PLANNING



* Multiple responses possible

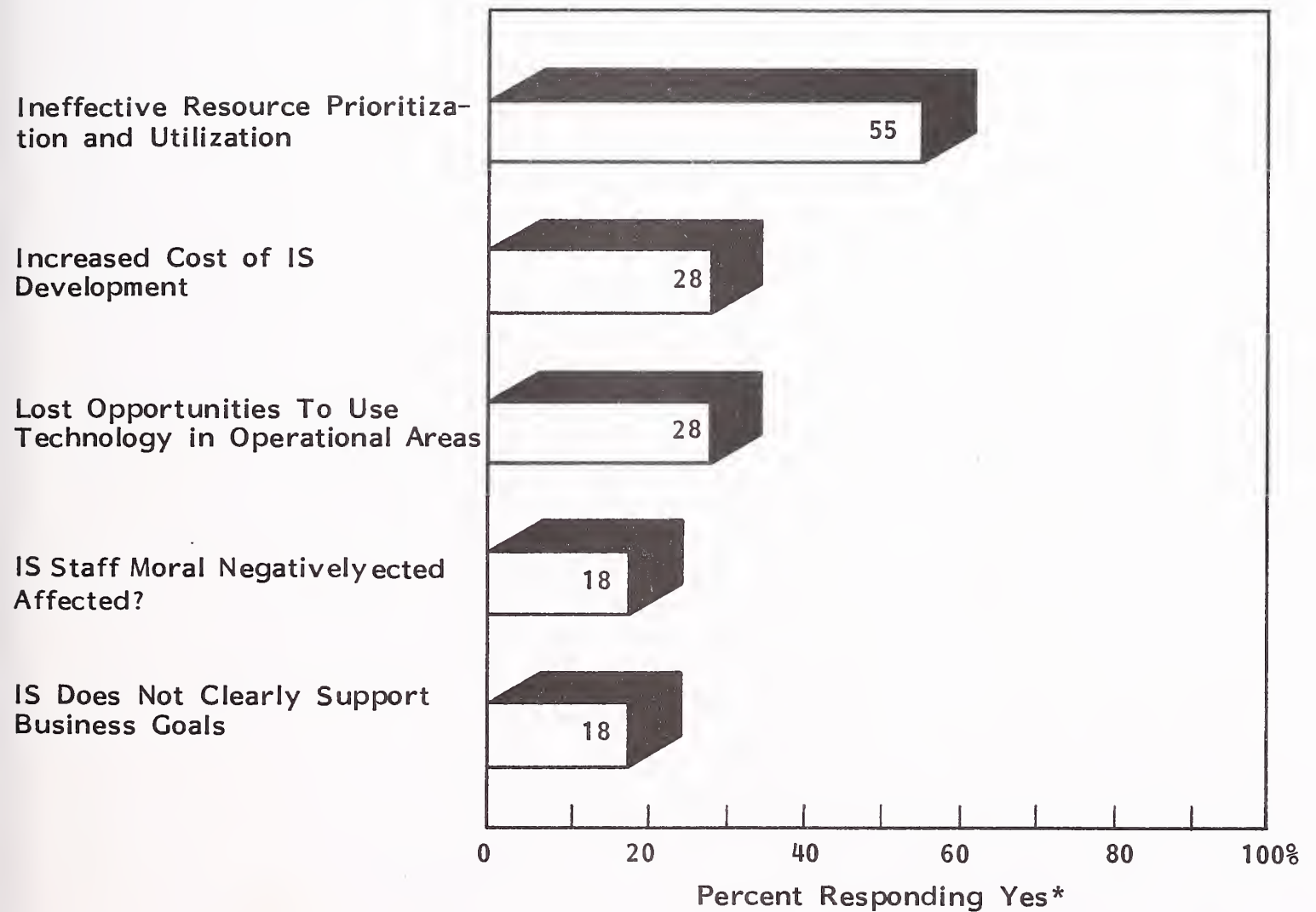
- . One was experiencing an exceptionally high growth rate and much of the resources were being diverted to advertising and promotion.
- . Two were in the process of distributing IS to the line operations. (Note: This last seems to be a precursor to achieving integrated IS and business planning.)
- In several cases general management or business planners do not understand the benefits of integrated planning (which also means they do not understand the benefits of IS). In these cases there will be no push from the business units to integrate planning; it will have to be initiated by IS.

2. RESULTS OF NOT INTEGRATING

- Those companies without integrated planning mentioned the following results of not integrating. Exhibit III-6 summarizes these results for the 11 companies that were without integrated planning.
- Both IS and general management respondents felt that not having integrated planning resulted in ineffective IS resource use and mediocre data processing support.
- Costs of IS development increased because of duplicate efforts (particularly with respect to personal computer applications).
- IS management felt strongly that the company was not taking advantage of advanced technology in operational areas. (These managers were from companies with scarce financial resources.)

EXHIBIT III-6

RESULTS OF NOT INTEGRATING



* Multiple responses possible

- IS staff morale was negatively affected. IS staff felt that their company was not keeping up with the competition. They felt they were being "jerked around" and forced to be reactive, not proactive. Several examples of acquisitions were given in which IS was told after the fact and could not adequately or quickly respond to the new volume.
- General management stated in two cases that IS seemed to just want to "do their thing," as opposed to supporting business goals.

IV HOW TO INTEGRATE PLANNING EFFORTS

IV HOW TO INTEGRATE PLANNING EFFORTS

A. HOW TO CONVINCE TOP MANAGEMENT

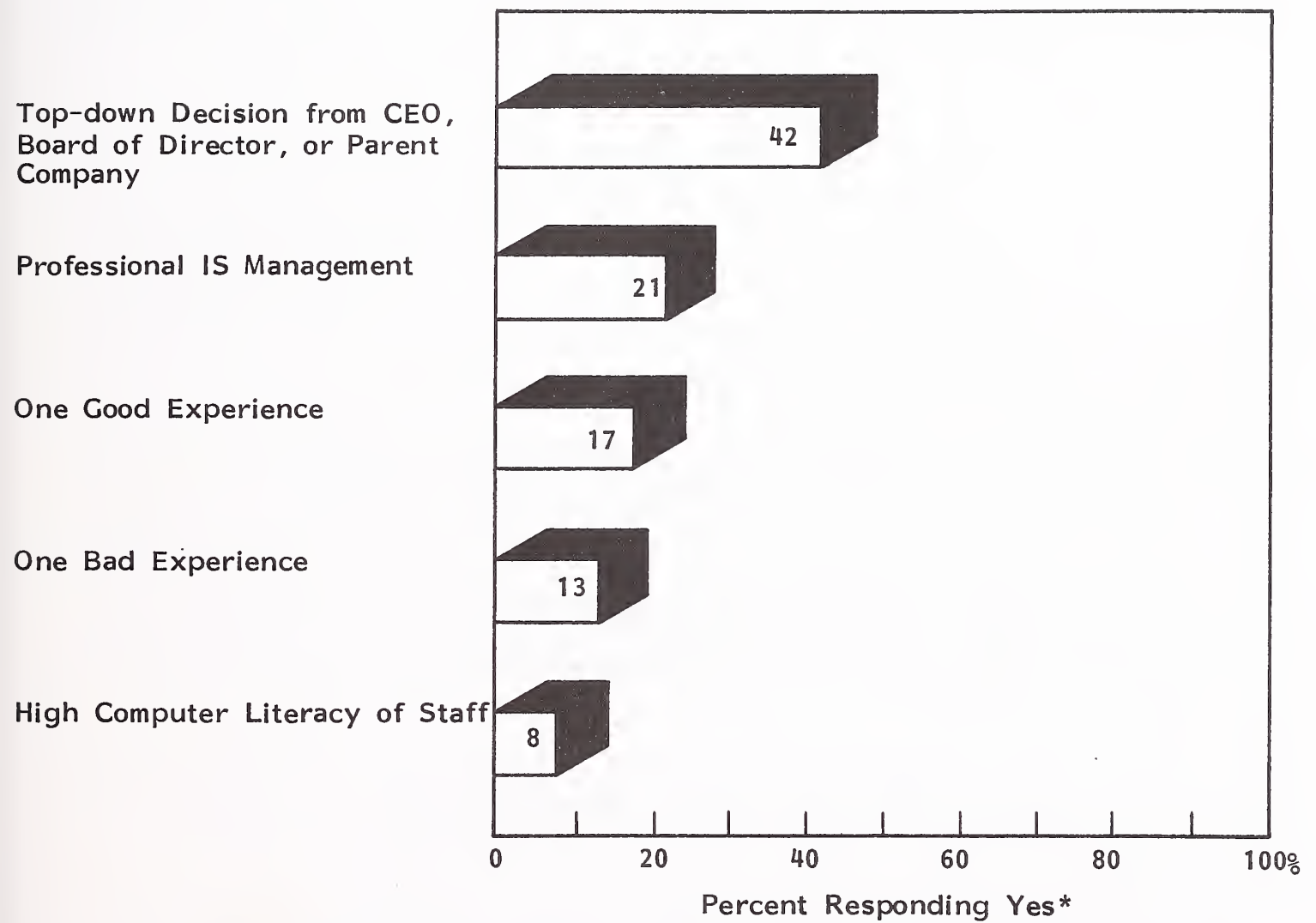
- Top management's blessing is required to initiate and support integrated planning. Their blessing is usually given when IS has proved itself to be a cost-effective contributor to the business. In order to show cost-effectiveness, IS management has usually elevated their level of accountability. IS investments are rigorously cost-justified and there is formal or informal auditing with the results publicized.
 - IS annual reports (see Chapter V, Section B), monthly status reports, or management meetings with user and general management (which also includes IS) are the modes used to publicize results. In many of the companies interviewed, IS had gone beyond just being cost-effective and was now actually contributing to revenue by providing a service or a product.
 - An example was one computer manufacturer that had developed a manufacturing requirements planning (MRP) system that resulted in cost savings. The manufacturer then packaged the software with its own computer and thus added a new product line.
- Both cost-effectiveness of service operations and revenue enhancements are strategic goals of every company. IS seen as a strategic tool is a goal of

integrated planning, but IS had to become a strategic tool before integrated planning could be approved.

- Exhibit IV-1 lists the respondents' answers to the question "How do you convince top management?"
 - The key is that vertical and horizontal communications were affected.
 - Many of the companies stated that there had been some cultural shift leading to a growing philosophy of removing the barriers between all levels within the organization.
 - Integrated planning efforts were achieved after communication in the form of cross-fertilization between line units (the business operations) and IS was accomplished. IS would work with line units to learn the business and through this process would also educate line unit management and personnel about the potential of IS.
 - In almost half of the cases there was no convincing necessary, but integrated planning resulted from a top-down decision.
 - In several cases top management or the board of directors hired a professional IS manager who, in turn, hired or trained personnel to initiate and participate in integrated planning efforts. In these cases, management also "salted" IS with business people and charted a course to distribute IS functions to line operations.
 - Professional IS managers are differentiated (perhaps unfairly) from top IS managers who came up the ranks. Professional IS managers were hired from outside for their ability to integrate separate IS domains and accomplish decentralized IS. Such managers were able to communicate IS potential and successes articulately. He or she paid much

EXHIBIT IV-1

HOW TO CONVINCE TOP MANAGEMENT



* Multiple responses possible

attention to selecting and improving IS human resources in order to enhance the IS understanding of the business; he/she reports to the president or to a very high level officer.

- In the companies that stated that professional IS management convinced top management, respondents said that the new IS manager insisted upon formal IS planning that initially was a separate IS plan and was predicated on business objectives. Once an IS plan was developed, integrated IS and business planning followed the next year.
- The most interesting responses were from those who said "one good or one bad experience." In some of the companies, IS was able to prove itself despite a lack of top management backing. Perhaps some system implementation had had a profound cost savings or had significantly contributed to revenue. IS management in these cases was able to show how IS had contributed to meeting objectives.
- The bad experiences were ones where it was obvious that if IS had taken part, the bad experience would not have happened. For example, the management of one company had acquired a business whose systems were in such poor shape that the expense of bringing them up to the level of the rest of the operation wiped out any benefit from the acquisition.
- It was cases where business plans had not included IS that showed the need for integrated planning and communications.
- In two of the companies the nature of the business (research and development) resulted in an extraordinary high level of staff computer literacy. Top management was forced to authorize changes that created an environment more supportive of staff efforts.

B. WHO SHOULD PARTICIPATE IN INTEGRATED PLANNING?

- A variety of players participate in integrated planning. Exhibit IV-2 shows the participants and their roles.
- IS management takes responsibility for educating users and management on the potential of information technology. Furthermore, they should have studies performed on productivity and should develop cost/benefit analyses to justify potential information technology applications (specifically office automation, which today means some aspect of end-user computing). Other studies were on system architecture and future technology trends and their potential implications.
 - In an insurance company a planner and a consultant assessed alternative insurance product distribution modes (such as direct writing), as opposed to the continuing use of the independent agent system. The company considered the organizational, political, and technological implications of each mode.
 - In a public utility company with no IS planner the business planner was called upon to assess demographic trends and the role of IS in responding to these trends.
- General (executive) management is responsible for overall business direction and policy.
- Division and line management are responsible for their respective plans (strategic, long-range, tactical, operating, budget, and other areas specific to each company). Contributions to the planning process come from planners within the divisions and from IS, IS management, and consultants.

EXHIBIT IV-2

INTEGRATED PLANNING PARTICIPANTS AND ROLES

PARTICIPANT	OVERALL DIRECTION AND POLICY	DIVISION AND LINE PLANS	EVALUATE; RECOMMEND CHANGES; APPROVE	I.S. DIRECTION AND PLAN	PLAN IMPLEMENTATION		PLAN CONSOLIDATION	STUDIES; EDUCATE ON I.S. ROLE
					I.S.	LINE		
General Management	R	-	R	-	-	-	-	-
Line Management	-	R	C	C	-	R	-	-
IS Management	-	C	C	R	R	C	R	R
Business Planner	-	C	-	C	-	-	R	C
IS Planner	-	C	-	C	-	-	-	C
Consultants or Task Force	-	C	-	C	-	-	-	C

R = Responsible

C = Contribute

- IS direction and plans are the responsibility of IS management. Contributions are primarily from IS planners, business planners, and occasionally consultants or task forces. Consultants are often used because of their knowledge of future technology direction or because of their planning and facilitative skills.
- Companies that were decentralized (IS and/or business operations) consolidated plans in all but one case. This is the responsibility of business and/or IS planners. In several companies that had integrated planning there was no longer a separate IS planning function.
- IS and line management are responsible for implementation of their respective plans or plan components.

C. WHAT ARE THE REQUIRED RESOURCES?

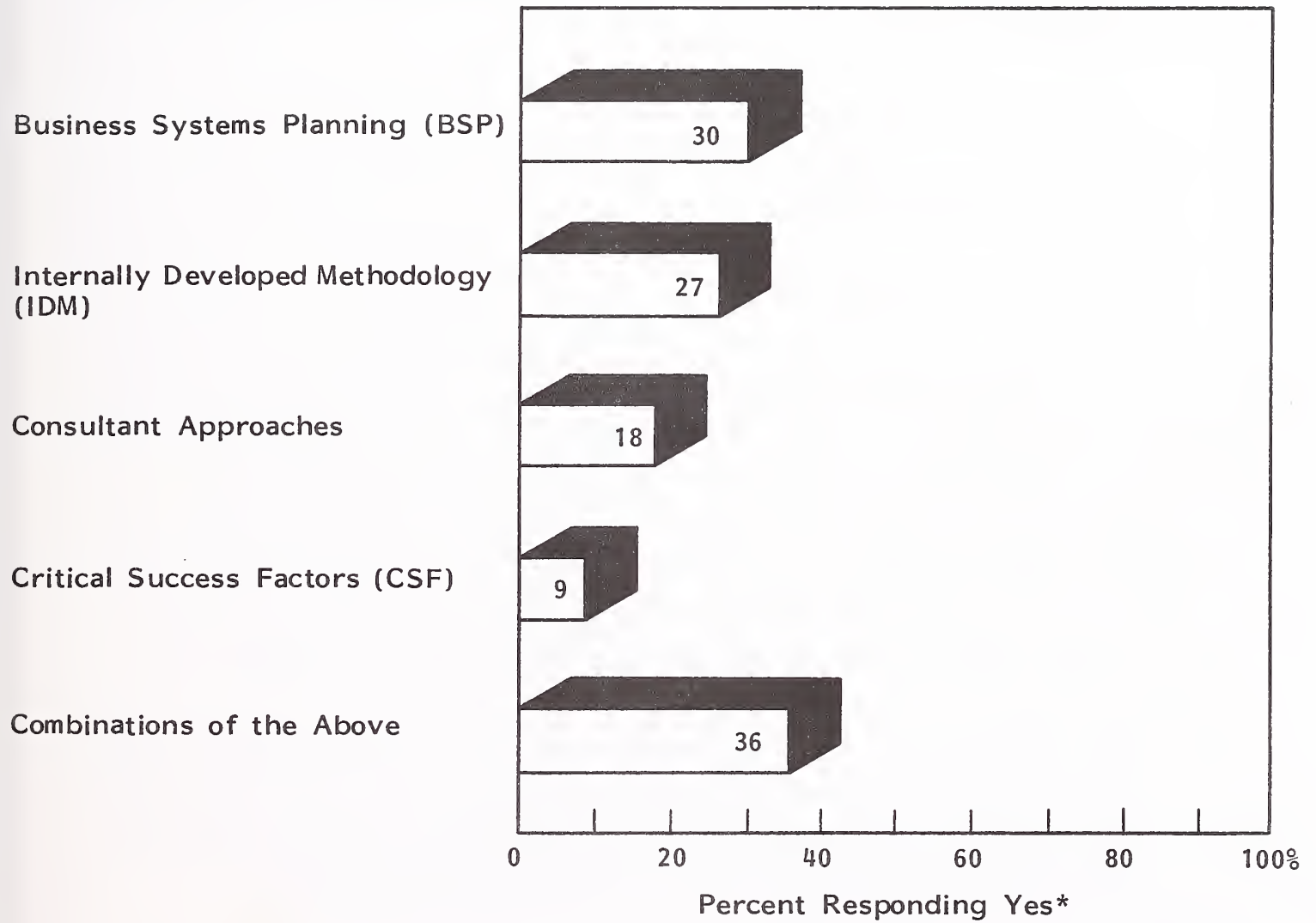
- The time spent and the number of participants varied so significantly that no generalizations can be drawn. Most of the companies had both business planners and IS planners with full-time planning (or study) responsibilities. At the least, about one month of effort was spent by both IS and line management each year to come up with next year's operational plan.
- A variety of consultants were used, as were other resources. Appendix B shows some of the books and seminars considered to be helpful in promoting integrated planning.
- Only a few systems-oriented seminars were mentioned, but many of the respondents said that they held in-house seminars led by IS and business planners or management. Seminar leaders spoke on IS or business-specific topics. In-house management development seminars that promoted communication skills were also held.

D. CAN YOU USE I.S. PLANNING METHODOLOGIES?

- Since all the companies in the survey had developed IS plans, one can say that all had used some sort of planning methodology. However, there were a variety of approaches, ranging from traditional IS approaches to internally developed methodologies (IDMs). Exhibit IV-3 shows the methodologies used by the respondents.
- The methodologies varied in terms of structure and flexibility. Those that used combinations of methodologies tended to have the most ad hoc, adaptive, and flexible approaches. Those using Business Systems Planning (BSP) from IBM, Critical Success Factors (CSF) from MIT, or approaches from IS consultants tended to have a more structured process. BSP and CSF are described in Section 1 and 2, which follow.
- Most of the companies had used BSP, CSF, or approaches from consulting firms to prepare their first significant IS plan, but almost all subsequently used an "internally developed methodology (IDM) for planning. It seems that the structure is necessary for the first planning process, but that subsequently more adaptive approaches are appropriate.
- The IDMs were occasionally named, such as "IS as a competitive weapon" or "competitive IS planning." These names reflect how IS is viewed at these organizations.
- All companies with an integrated planning process no longer used BSP or CSF because these are not really intended to promote integrated planning. However, so far the approaches used by consultants were promoting ongoing and integrated planning.

EXHIBIT IV-3

METHODOLOGIES USED



* Multiple responses possible

I. BUSINESS SYSTEMS PLANNING METHODOLOGY

- As mentioned before, BSP is appropriate on a one-time basis. It can be used to study an enterprise's business system to meet short- and long-term information requirements and make management recommendations.
- Briefly, BSP provides for an analysis of the environment at increasing levels of detail, as follows:
 - Business objectives and problems.
 - Business processes.
 - Business organization.
 - Information and computer applications.
 - Data files.
 - Data classes.
- Further, BSP identifies IS objectives and defines required IS changes.
- BSP defines an information architecture, establishes architectural priorities, shows technologies and management practices requiring support, and defines MIS changes required for architectural priorities. The results of these activities are used in establishing IS recommendations and action plans.
- The BSP output includes the following:
 - Findings and conclusions.
 - Major IS problem analysis.

- Specific management information systems problems deduced from inadequate IS or IS support problems.
- IS objectives.
- Definition of high-priority IS projects.
 - First systems support requirements.
 - Projects addressing major IS problems.
 - Immediate actions recommended.
- Action plan for follow-on projects.
- The impact of a plan using BSP is that priorities are established for management commitment and resources are allocated accordingly. The process itself gets management involved, since it begins with a definition of management's business objectives. The interview process can be a time when the IS planners educate the business management on the potential benefits of IS.
- The respondents' criticisms of BSP in terms of promoting integrated planning include:
 - Not a "living" document - doesn't support ongoing planning.
 - Too much focus on data elements - goes from strategic issues to detail too quickly.
 - Too forced and artificial.

- Breaks down if there are organizational changes during the planning process.

2. CRITICAL SUCCESS FACTORS

- The CSF approach to IS planning consists of a study that starts with a wide-spread sample of managers who are queried about their total information needs.
 - Questions are based on managers' critical success factors - those factors that for any business are the limited number of areas in which results will ensure successful competitive performance for the organization.
 - Often an outside consultant is used, particularly for interviews at the executive level. Managers were pressed to quantify the critical factors so that these factors could be measured later.
 - The results of the sample are compared with the existing information systems.
 - An information structure can be developed from analysis of the various managers' responses. A consultant can help find trends in the critical success factors. Unavailable subsystems necessary to provide the information are identified and assigned priorities for development.
- The criticisms and deficiencies of CSF included:
 - Too academic.
 - More form than substance.

- Managers couldn't see purpose of exercise and how it related to developing a systems plan.

E. WHAT WORKS?

I. KEYS TO SUCCESS

- An integrated planning process has less to do with developing a planning approach than it does with developing the accountability of IS, distributing IS activities closer to the divisions to be supported, and assisting management to see IS as a strategic tool.
 - **Accountability:** IS consistently meets budget and schedule commitments. IS provides services that are cost-effective; costs are rigorously controlled. Further, IS reports on their accountability to the end user, perhaps through the use of an IS annual report or via monthly status letters or meetings. This contributes to a better IS reputation. During the reporting IS can educate end users on the potential of IS.
 - **Distribution of IS:** IS, perhaps along with finance and human resource functions, is distributed to the divisions, thereby embedding IS functions in the divisions. Closer communication between the IS function and the business units is facilitated by this move. Conversely, IS staffs are "salted" with personnel who have a clear understanding of the business. The result is that business management better understands IS, and IS better understands the business.
 - **IS is seen as a strategic tool:** Management knows how to assess the competitive impact of information technology. Management sees that information technology has an impact at the industry, firm, and strategy levels, as shown in Exhibit IV-4.

EXHIBIT IV-4

THE THREE-LEVEL IMPACT OF I.S.

INDUSTRY LEVEL
Products and Services Markets Production Economics
FIRM LEVEL
Buyers Suppliers Substitution New Entrants Rivalry
STRATEGY LEVEL
Low-Cost Leadership Product Differentiation Concentration on Market or Product

- Industry Level: To link IS to the strategic needs of the organization, management must anticipate the impact at the industry level before it occurs, so that strategies can be developed to position the organization in the new industry setting. For example, if teleconferencing is used as a substitute for travel there will be a significant impact on the transportation industry's business travel market. Over the next five to ten years management must look at the impact of information technology on:
 - . Products and services - for example, IS may alter the product life cycle and increase the speed of distribution.
 - . Markets - for example, the financial industry, through creating new delivery systems such as ATMs and home banking services, contributes to an increase in consumer and business customers' computer literacy. The result will be an increase in the demand for electronically based products and services.
 - . Production economics - through the monitoring, controlling, and coordinating potential of IS, economies of scale (in machinery, space, energy, and labor utilization) can be significantly changed.
- Firm Level - IS changes an industry structure through affecting the competitive forces. Michael Porter in Competitive Strategy: Techniques for Analyzing Industries and Competitors has developed a framework of competitive forces that can be used to identify opportunities for IS deployment. The framework includes the following competitive forces:
 - . Buying power - for example, IS becomes a strategic weapon when buyer information systems can determine the profit potential of various buyer groups.

- Supplier power - IS can mitigate the factors creating the power of suppliers. For example, robotics or expert systems can reduce the cost of labor and reduce the extent to which labor cuts into a firm's profits.
- Substitution - product substitution economies are both a threat and an opportunity. Having to combat substitutes is costly, but offering a substitute can increase profits. IS can be deployed for both situations. For example, the ability to offer consolidated financial services, facilitated by IS, provides a substitute for discrete financial services.
- New entrants - IS can deal with the impact of new entrants, both offensively and defensively. For example, extensive information services offered to independent insurance agents by the first insurance company to develop an extensive telecommunications network (giving access to on-line services) serve to lock the agent to that company. Other insurance companies attempting to offer more information services are essentially blocked from entry.
- Rivalry - IS can assist a company in determining when to compete, when to cooperate, and even how to do so effectively. The "how" is affected most by the use of IS distribution channels. For example, small wholesalers can effectively rival the larger wholesalers by availing themselves of the Uniform Communication Standards (UCS) that provide for standardized data and communication networks, or smaller banks may share a common group of ATMs against a large market share leader.
- Strategy Level - Companies position themselves relative to their industry by effectively implementing one or more generic strategies

and IS can affect the ability of the organization to execute the strategies. Information technology influences a firm's strategy by affecting:

- Low-cost leadership - IS can be used to improve the productivity of labor (reducing its amount or replacing it with lower cost IS). IS can also improve the use of other resources such as equipment and inventory.
 - Product differentiation - IS can contribute to the quality of a product or service or add unique features.
 - Concentration on market or product niche - For example, IS can be used to locate market/product niches and assess profitability within each through the use of data base and modeling tools.
- There are three other keys to success in implementing an integrated planning approach: an insistence on open communications, top management support, and synchronized IS and business planning calendars.
 - Open communications: Both vertical and horizontal communication channels should be open. Top management and similar layers should communicate the company's direction and should listen to lower levels' comments about the impact of business direction on operations. Further, communications across functions should be promoted, such as between IS and various business units. Joint study teams are the norm for issue development and planning.
 - Top management support: There should be a sponsor to sell the approach and carry it out. IS management usually does not have the clout, so a sponsor from top management is needed who can sell the approach to the executive group. A sponsor who has had a positive experience with IS and understands the benefits of IS and integrated planning can be found in the business unit.

- Planning calendars should be synchronized: IS prepares their plan and budget at the same time that the business units are preparing theirs. This step is not enough by itself, but is mandatory for integrated planning.

2. PLANNING PROCESS

a. Process Variables

- Each company interviewed that had an integrated planning process had a different approach, which varied in terms of formality, planning horizon, and documentation of results.
 - The formality of the process varied from a structured process (with each business manager developing a "straw man" plan that was reviewed, refined, and finally accepted), to one where most planning occurred in a two-to-three-day brainstorm of key managers with one person documenting the results.
 - Exhibit IV-5 shows the various horizons for planning efforts. The longer planning horizons were addressed by the energy and public utility firms through the development of scenarios and covered a period of five to twenty years. The long-range plans were usually for five years, but several firms had three-year plans and a few had seven-year plans. The long-range plan was occasionally called a capital plan. The operating/budget plan had a horizon of one or two years.

b. Process Steps

- Whether the planning effort was for the development of a scenario, a long-range plan, or an operating/budget plan, the following steps, summarized in Exhibit IV-6, were performed:

EXHIBIT IV-5

PLANNING HORIZONS

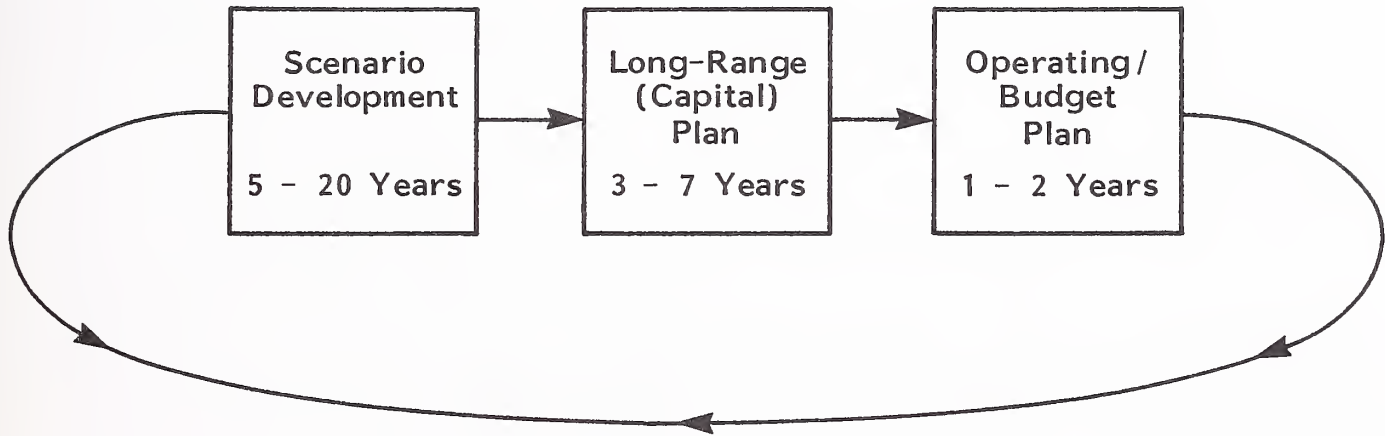
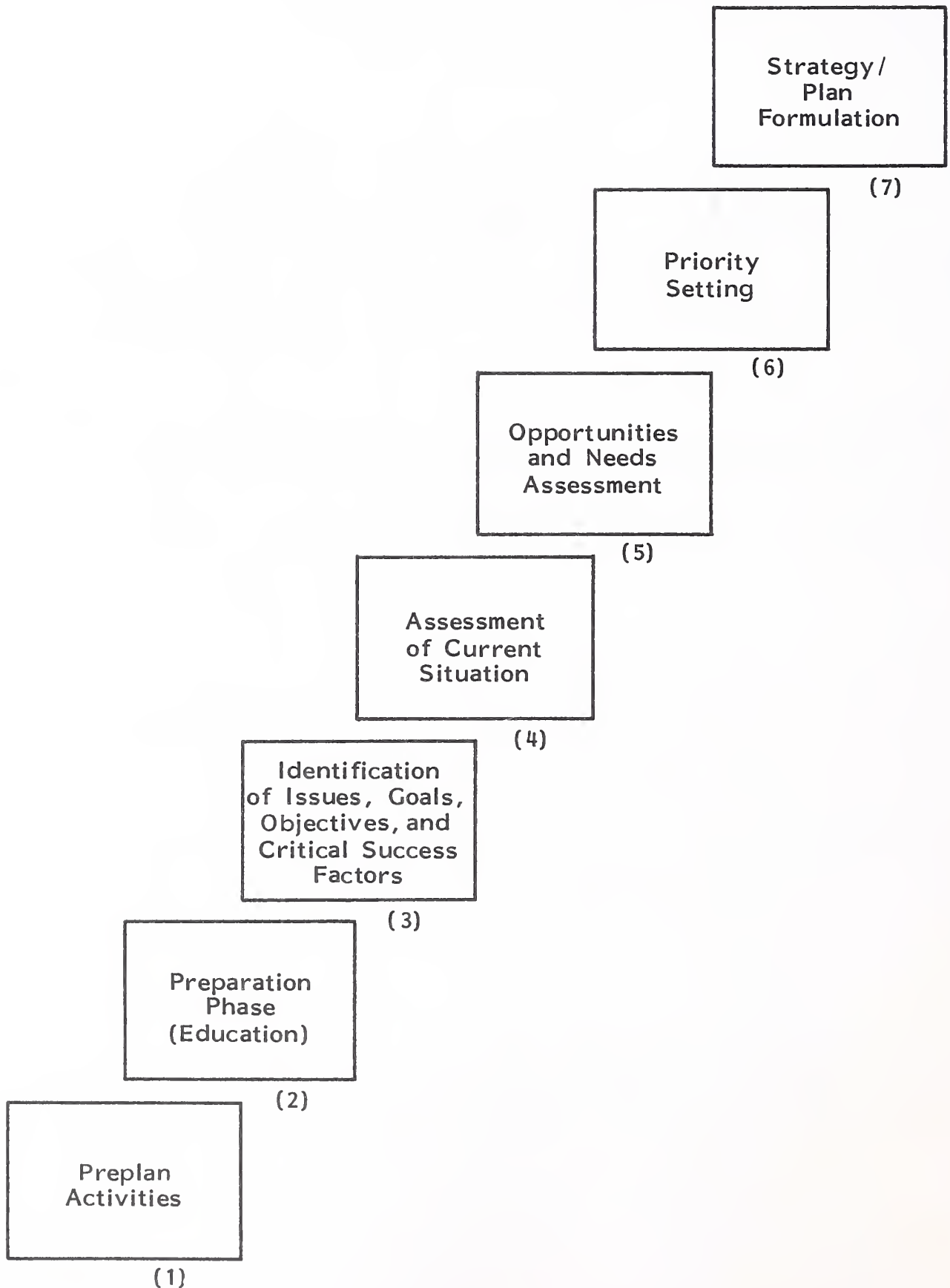


EXHIBIT IV-6

PLANNING STEPS



- Preplan activities consisted of informing key participants about the effort's scope, specific objectives, resources, and any administrative mechanics. Administrative mechanics often had to do with review and plan consolidation efforts. IS and business planners and their respective management were most involved at this step.

- The preparation phase consisted of activities to prepare the planning support team for understanding their role in educating user management. For example, in those companies where IS was not yet viewed as a strategic tool, the IS and business planning staff had a responsibility to educate line management on the potential of IS.

- Occasionally, an "IS potential" statement would be prepared and distributed throughout the organization. This statement was most often prepared by IS and detailed the potential of IS in each of the business units. It might take the form of a scenario. At one company, it consisted of a white paper discussing the following:
 - Economic/environmental forces affecting the future:
 - External forces.
 - Political/economic/demographic.
 - Specific to the industry.
 - Internal forces.
 - Company business scenario (strategies, objectives, goals).

- Technical scenario of IS resources within the company.
 - Manpower scenario showing IS requirements and impacts.
- Demand for IS.
 - Technology scenario - expectations of future developments and their potential impact on the strategies, objectives, and goals of the business.
- First, issues, goals, objectives, and critical success factors are identified.
- Also at this stage, the factors that management views as critical to achieving goals are named. This stage was done by each line manager, in some cases working separately and in others working in key manager brainstorming sessions. In companies where IS was viewed as a strategic tool, the results of this stage were communicated throughout the organization.
- The "assessment of current situation" step consisted of determining the status of the business in terms of strengths, weaknesses, capabilities, and constraints. This step was performed by each section of the organization and essentially provided the baseline for the subsequent plan. Again, the step could be performed individually or in group sessions and the results communicated broadly or narrowly.
- In the opportunities and needs assessment phase, descriptions of the business opportunities and requirements that IS can address were developed. These were based on objectives identified in the issue/goal/objectives stage - Step 3. IS and/or the business planner were often

called upon to consolidate the results of this step and to report back to line managers on any opportunities or needs held in common.

- In the priority-setting activity, the opportunities and requirements were evaluated and priority classes established based on the goals and objective rankings previously identified - Step 3. Again, the results were communicated and, in most cases, line managers and executive management negotiated for changes in priorities.
- In the plan formulation step, documentation appropriate to the planning activity was prepared. If a strategy was being developed, alternatives for pursuing opportunities and addressing requirements were documented. If a plan was being developed, opportunities and requirements priorities were documented, along with the steps needed to address them. Consolidation and reporting were accomplished at this step also.
- The companies with an integrated or linked planning process accomplished the above in an environment of open communication between levels (vertically) and between functional units (horizontally).
 - At one large energy company, system and business planning had reached a high level of sophistication through the use of capacity-planning techniques based on capacity management theories. Capacity management provides a structure for data gathering for the user and defines a high-level system impact based on the results of business planning. The steps for planning at this company were as follows:
 - The user team develops software specifications (actually defining terminal screen layouts that will be used by data entry staff) to satisfy business operation needs.
 - The software development vendor (in-house IS group) uses these to develop programs.

- . The user gets input from the in-house IS group as to CPU and I/O volume and feeds these into a capacity planning model that has been developed for them by their consultant.
 - . The user can then turn information they have about business transaction volume into system requirements (e.g., the CPU required to maintain a given flow rate of transactions required to run the business). Users can project system requirements based on business plans (e.g., to contract or expand business volume) that feed into their business plan as a line item of system resources required.
 - . The IS group consolidates estimates from each user area and develops a separate IS plan to meet the requirements of all users.
- At other companies the process was part of an ongoing looping process, as shown in the following examples:
- . At one large services company, the respondent stated that "Strategic planning is ongoing. Each year starts with identifying or reiterating critical success factors. Corporate IS works with distributed IS, which works with line managers to show others that IS can affect the competitive posture. Line managers develop plans and identify IS activities that stimulate the business. The results of the planning and development efforts are reported back to all other line managers. Implementation activities are reported on an ongoing basis throughout the year and fed into the start of the next year's planning effort."
 - . At a large bank, the respondent stated that "integrated planning is a looping process with a high degree of interaction between

line and IS management. We begin with line management developing five-year plans. At the same time, IS is preparing a plan that tries to anticipate line group directions. IS is able to do this because line management sits in on IS planning sessions. Conversely, IS assists the line managers in their business planning. IS presents their plan to line management and discussions ensue. All managers then refine their plans and meet in an executive-level planning session for one day and discuss problems, develop priorities, and finally do next year's financials. They then each go back and do a one-year plan, which includes sections on human resources, financial resources, facilities, and systems. IS publishes a consolidated plan. By then, the next year's process must be started."

- . At a distribution services organization where IS is a line item in the plan, the operating units start their long-range planning efforts in August and complete their operating budget by the end of April. These are submitted in November, consolidated by the end of December, and then presented to executive management. During January corporate management provides feedback to the operating units and a series of negotiations occur until final recommendations are made by the end of January. In February the operating units put together a detailed budget for the following year. The budgets are approved by the end of April. Planning for the next year begins in August.

V DOCUMENTATION OF INTEGRATED PLANNING

V DOCUMENTATION OF INTEGRATED PLANNING

A. THE PLAN

- Of the 24 companies with integrated or linked plans, 10 had a single plan. This single plan was a strategic or long-range plan. Another seven had a separate IS plan in addition to the business plan. The remainder were at the point of preparing their first integrated plan and so far had only developed guidelines (see the next section).
- Those companies with a single integrated plan still had application development priority lists and projects plans (e.g., for implementation of a network or enterprise-wide data base), but these were not full-blown IS plans (a la BSP).
- Those with separate plans felt quite adamantly that a separate IS plan was mandatory - each division or business unit should have a plan. The documents were intended to serve as tools for monitoring progress.
- As mentioned in Chapter III, Section B (on the definition/characteristics of integrated planning), the documented results do not determine whether a company has integrated planning, but rather whether there is a planning process.

I. A SINGLE PLAN

- Those companies with a single plan treated IS just like financial resources, human resources, and facilities. In other words the plans for each of these resources was treated with equal importance in terms of meeting business goals.
 - One company had a strategic plan, an "executive plan" (long-range), and an operating (budget) plan.
 - The strategic plan covered the next 20 years. It specified how revenue was to be generated (given two scenarios for consumers), how research and development needed to assist, and what data processing, communications, human resources, and financial resources would be required.
 - The executive plan covered three years. It included, by function, an assessment of the external and internal environmental issues during this period and the corresponding objectives. It then covered achievements, such as progress in equal employment opportunity, productivity, and management effectiveness. This last section covered the achievements of IS. The plan then listed methods of realizing the opportunities of the next three years.
 - Finally, the operational plan contained next year's budget and plans (by function).
 - While there was one plan at each of the above levels, it should be noted that the last two were by function and so, essentially, IS had its own plan. However, given that IS was treated as being as important as financial and human resources, the result was an integrated plan for the enterprise. IS is a critical and strategic part of this company.

- The goal of an integrated planning process is to have a company's critical resources - capital, labor, facilities, and equipment (the arena of IS is included here) - treated with equal importance.

2. A SEPARATE I.S. PLAN

- It appears that a separate IS plan can exist (in fact, to many companies it was mandatory) without jeopardizing integrated planning.
 - For example, Exhibit V-1 is the table of contents of one company's IS plan.
 - Their plan is, in fact, the consolidation of the various division's planning efforts and is based on the thrusts of the divisions.
 - It should be noted that the engineering and R&D laboratory divisions have a high level of computer literacy and place the heaviest demands on the corporate IS organization.
 - Appendix C contains the plan of Company ABC. It begins with an overview of the company's planning assumptions and a visual model showing the division-based plans and thrusts. Note that this plan has been "sanitized" in order to not divulge the identity of the firm.

B. I.S. ANNUAL REPORT

- The IS annual report is used as a tool by several companies for communicating how IS can and does assist in meeting business objectives. The report also acts as a strategic tool. Shortly after issuing this report, many companies achieved an integrated planning process. The IS annual report:

COMPANY ABC's I.S. STRATEGIC PLAN

- 1.0 Planning Assumptions and Model
- 2.0 Enterprise and Division Needs
 - Program (Function) Support
 - Productivity
 - Capital and Funding
 - Control
- 3.0 Cornerstones of IS Strategies
 - Diverse Technologies
 - Resource Integration
 - Incremental Growth
- 4.0 IS Strategies and Direction
 - Networking
 - Shared Computing Facilities
 - Distributed Computing
 - Professional Workstations
 - Management Information
 - Funding and Financing
- 5.0 Status of IS Systems' Thrusts and Plans
 - The Network
 - Shared Computing
 - Automated Support of Administrative Services
 - Automated Support of Research Laboratories
 - Automated Support of Regional Offices
 - Automated Support of Engineering Workstations
 - MIS Enhancements
- 6.0 Summary

- Is a statement minimally consisting of the IS mission, IS strategies, and IS issues that are deemed to be of importance to effective business operations.
 - Conveys that the IS organization sees itself as a resource providing support to the operating businesses and corporate departments. The report also shows that IS has a role in identifying opportunities for improved business performance (e.g., the use of IS to develop a competitive edge) and in responding positively to the information needs of the user communities.
 - Further conveys that IS understands the external environment and the effects of the economy, consumer issues, and industry-specific issues; is aware of the internal environment (specifically the company's objectives and strategies and the ability of IS to support these); and knows technology directions and implications.
 - May discuss systems architecture and/or data base trends and strategies that reflect major projects or development efforts, particularly as they clearly support the strategic business objectives.
 - May discuss the changing roles of an IS organization and users (internal or external), given changes in technology and in the computer literacy of employees and clients.
 - May discuss the IS organization and functions and how these support the business and changing roles.
 - Sometimes also includes last year's projects, significant achievements, and IS's performance against the budget.
- An example of the contents of one IS annual report of a manufacturing company is included in Appendix D.

C. I.S. GUIDELINES FOR LINE MANAGERS

- As mentioned previously, several companies have developed guidelines for line managers to consider as they develop their business plans. These guidelines were intended to assist line managers in developing their specific systems plan, which was to be part of the operating planning process. Further, the exercise was intended to stimulate the consideration of systems as strategic tools, such that the strategic planning process would have the benefit of this thinking.
- These guidelines were usually developed under the supervision of a headquarters IS group, but in the case where systems were also distributed, contributions had been made from the distributed systems groups. In these latter cases, the division manager supported by these distributed systems groups had contributed to the review of these guidelines and had "signed off" on them.
 - At one large services corporation, the Computer Applications Committee (which was composed of representatives from headquarters systems, distributed information systems, and user management) had jointly developed guidelines. These guidelines had been signed off by division user management and by headquarters systems management.
 - Line managers had completed their first operating plan (including a systems plan), and the headquarters systems group was consolidating the results in order to identify common issues and determine if any redundant activities were planned. The headquarters systems group was going to distribute a document covering issues, as well as connect line managers who were planning redundant activities.
- Exhibit V-2 lists guidelines that were part of the operating plan instructions for this company.

I.S. PLANNING GUIDELINES

SYSTEMS PLAN REQUIREMENT OUTLINE

1. Briefly discuss your systems environment. (Those aspects of the overall environment affecting or being affected by systems.)

Outline your Systems Plan. (Plan objectives, scope, and a summary of the various parts of the systems plan, including major projects and other actions).

Identify the major considerations affecting your Systems Plan.

Operating company strategies, objectives, and guidelines

Client requirements

Business/applications requirements

Hardware and software needs

Personnel needs

Funding and cost-recovery considerations

Explain how your Systems Plan supports your business strategy and business plan. (Describe the specific business conditions, objectives, strategy, and other issues that the plan supports.)

Discuss the compatibility of your Systems Plan with the IS strategies that have been developed jointly by the distributed IS and line management representatives. The IS strategy had consisted of sections covering aspects of computing that had been distributed to the IS groups and included information processing, microcomputers, project-based computer support, and office systems. The communications strategy had not yet been distributed to the IS groups because an enterprise-wide network was under development.

2. Highlight progress during the past year.

Review any changes in emphasis or priorities.

Identify problems.

3. Discuss the major systems issues in the priority sequence that will be addressed during the plan period.

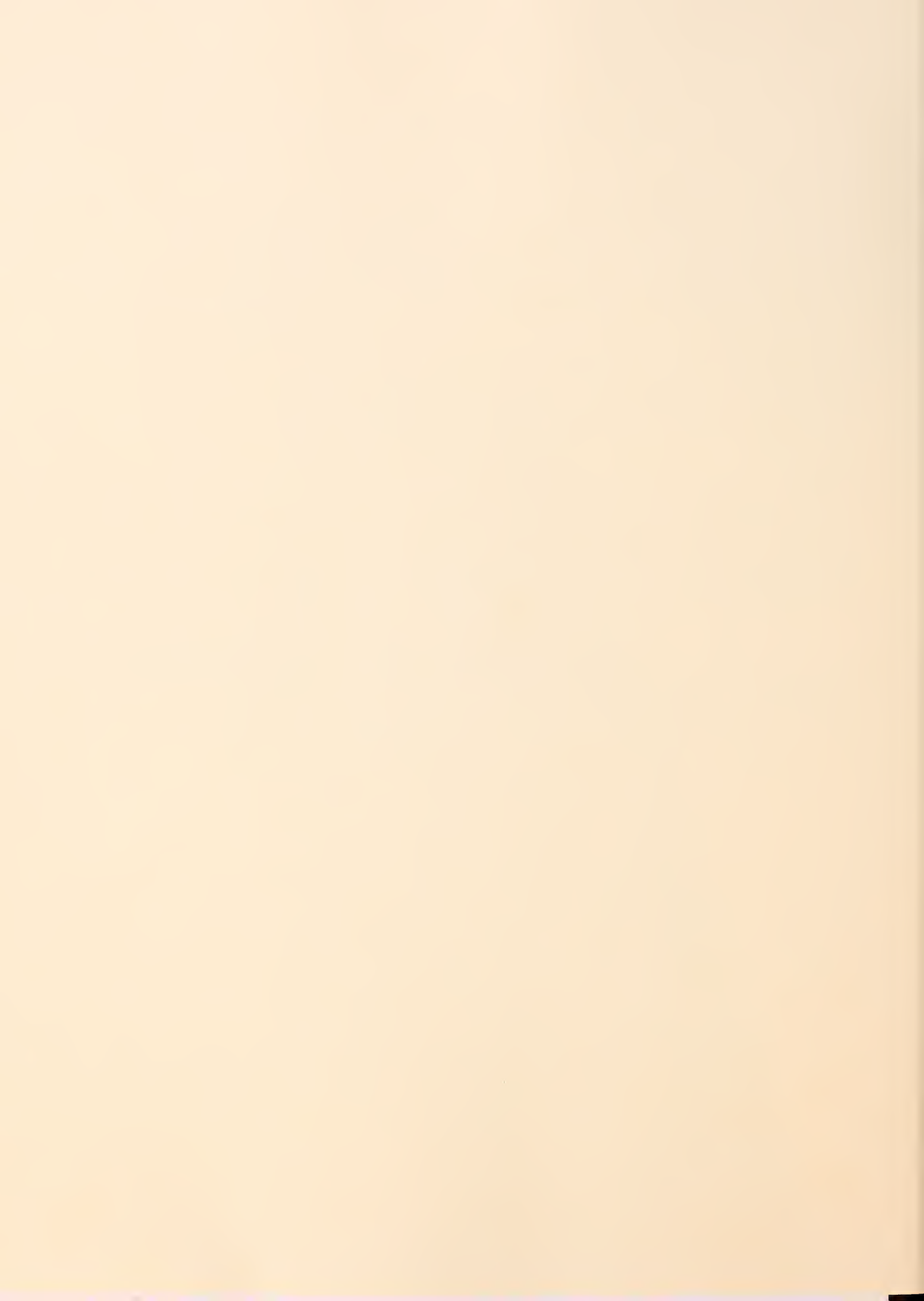
4. Discuss any related areas of concern.

Identify issues that need senior management guidance or involvement.

Identify problems that may be common to other organizations.

- Other companies had guidelines and covered other topics.
 - For example, one company used the planning process to obtain IS inventory information from line management. They distributed guidelines that were prefaced with policy directives concerning the decentralization of IS. They also requested each manager to provide the following:
 - . An inventory of IS resources (data processing, office automation, and telecommunications systems, etc.) that listed how each supported the business unit.
 - . An inventory of workstations per worker and services accessed.
 - . An inventory of how much information is machine readable and how much is projected to become machine readable in the coming year.
 - Management intended in subsequent years to ask each manager how information resources are to be used as competitive tools and how costs are to be justified.

VI CONCLUSIONS AND RECOMMENDATIONS



VI CONCLUSIONS AND RECOMMENDATIONS

A. CONCLUSIONS

- Integrated planning is an indicator that a company's management has accepted the critical nature of IS resources. This acceptance of IS as a strategic tool is the primary characteristic of integrated planning. At this point IS gains equal footing with financial, human, and facilities resources.
- The preconditions for integrated planning are:
 - Accountability - IS consistently meets budget and schedule commitments. IS reports on its accountability in status meetings or formally through a document like the IS annual report.
 - Distribution of IS - IS, perhaps along with finance and human resource functions, is distributed to the divisions to be supported, thereby embedding IS functions in the line operations. This allows IS to better serve end users and promotes better understanding of the potential of IS.
 - IS is seen as a strategic tool - Management knows how to assess the competitive impact of information technology. They see that information technology has an impact at the industry, firm, and strategy levels.

- Open communications - Both vertical and horizontal communication channels are open. Top management and successive layers communicate on business directions, and communications across functions are easy (IS to end users and vice versa).
- Top management support - There must be a sponsor to sell the integrated planning approach and to carry it out. A sponsor can be found in a business unit that has had a positive experience with IS.
- Planning calendars are synchronized - IS and business unit management prepare their plans at the same time and communicate with each other.
- The companies in the INPUT survey appeared to go through a series of phases prior to achieving an integrated planning process.
 - Initially, there was no IS plan.
 - Now IS plans by means of BSP or some other methodology that begins by stating business objectives and then captures the requirements of business management. IS is reactive but responsive to business requirements.
 - IS achieves accountability - it consistently meets budget and schedule - and begins to publicize or in some way communicate its accomplishments and further strategic potential.
 - IS is distributed closer to user management. This act further serves to cross-educate IS and user organizations about each other's capabilities and needs.
 - Corporate IS writes guidelines to distributed IS management for working with user management to prepare IS plans for distributed IS

activities. Corporate IS consolidates the results and identifies redundancies, if any, and addresses common issues.

- Corporate IS and distributed IS issue guidelines and communicate with business management on how to prepare the IS portion of the business plan. The resultant business plan includes a discrete system plan section for each line manager. Corporate IS and/or business planners consolidate the results and identify redundancies and common issues.
- The business plan reflects systems along with capital, human resources, and facilities - each resource is considered to have equal strategic importance. A separate IS plan may still exist to serve as a document against which to monitor.
- The benefits of integrated planning are that IS clearly supports business goals and objectives: there are reduced costs of operations, actual payback can be achieved from IS, there is more effective resource prioritization and utilization, and the plan can be used as an aid to ensure accountability.

B. RECOMMENDATIONS

- The onus is on IS to show a better understanding of their function within the organization. They can begin by understanding the issues of the business and by defining their own issues in business terms, rather than technological terms. Through integrated planning, issues held in common are much easier to address jointly.
- It is also up to IS to show how it can be a strategic tool. IS can begin by looking at past business decisions that might have had a more profitable outcome if IS had been involved in the planning. In order to convey the strategic nature of IS, IS must play a consultative role. IS management is in the

best position to tout the strategic nature of IS. IS management and planners can use the framework in Chapter IV, Section E, to trigger their thinking about the potential impacts of IS at the industry, firm, and strategy level.

- Documents such as the IS annual report are a way to publicize that IS understands the business and can show accountability. A document should be developed that shows how IS can and does assist in meeting business objectives and acts (or can act) as a strategic tool. The statement should consist minimally of the IS mission, strategies, and issues that IS deems to be of importance in effective business operations (see Appendix D - IS Annual Report).
- In order to learn the business, IS should either develop the business strengths of existing IS employees, tap into line units for business expertise, or hire employees with technical, planning, and business experience. The resources of consultants, books, and seminars listed in Appendix B can also be used. This is in addition to distributing IS staff closer to line operations.
- IS will need to communicate guidelines to line management the first few times they are asked to address system planning in their planning efforts. These guidelines should be developed jointly with line management representatives, or at least "signed off" by line or general management. Guidelines should be short and easy to complete.
- The results of line management planning efforts should be consolidated and common systems issues identified. If there are any plan redundancies, the involved parties must be made aware of their duplicate efforts, and negotiations promoted to reduce such efforts.
- The degree of formality, planning horizons to be covered, and documentation of results are dependent upon corporate culture and the resources brought to bear (staff, money, consultants, and other outside resources).
- The actual approach should consist of the following steps:

- A planning support team should request, review, and/or consolidate plans.
- During the preparation phase the planning support team should perform activities to prepare themselves for their role in educating user management. An "IS potential" paper can be prepared and used by the support team to promote the idea of IS as a strategic tool. Discussions on the potential of IS should be held with line management prior to the beginning of their planning efforts.
- During the stage where issues, goals, objectives, and critical success factors are identified, the rationale behind plans must be defined. This must be done alone by each line manager, or in key-manager brainstorming sessions. Results should be shared.
- An assessment of the current situation in each line operation or support function will be necessary to serve as the baseline for the planning effort.
- Descriptions of opportunities and needs from an assessment phase are necessary. IS management and or business planners may need to consolidate the results of this step and report back to line managers on any opportunities or needs held in common.
- The opportunities and requirements must then be evaluated and priorities set. The results should be communicated back to all line managers, and negotiation for change should be possible.
- In the plan formulation step, documentation should be prepared that is appropriate to the planning activity (strategic, capital, or operating budget) and that is appropriate to the need for formality or informality. The result should be a document to which management at every level can be held accountable.

C. CAVEATS

- The timing of integrated planning is critical. If there are reorganizations or other distracting and draining events occurring, the time is not right.
- A top management sponsor outside of IS is probably needed. IS usually does not have the clout by itself. The sponsor can be found in a division that has been satisfactorily served by IS and that has achieved some goal through IS (for example, significant cost reduction or revenue enhancement).
- Consider using a consultant, particularly to sell executive management on the idea of IS as a strategy tool. A consultant may offer the necessary objectivity and "seal of approval."
- IS and business planners should publish and communicate their results widely, both vertically and horizontally.

APPENDIX A: RESPONDENT SUMMARY

APPENDIX A: RESPONDENT SUMMARY

- Exhibit A-1 summarizes the industry and planning profile for each of the 33 companies for which telephone or on-site interviews were conducted. The information includes:
 - Respondent function.
 - Planning characterization.
 - Information systems.
 - Business operations.
- Exhibit A-2 summarizes the respondents by job function.

EXHIBIT A-1

RESPONDENT INDUSTRY AND PLANNING PROFILE

Industry	PLANNING CHARACTERIZATION				
	Respondent Function	Information Systems	Business	Consolidated	State of Integration
Process Manufacturing	BP, GM	C	D	Y	I
Finance	ISP	C	C	N/A	N
Finance	ISP	C	C	N/A	N
Process Manufacturing	ISM	D	D	Y	I
Discrete Manufacturing	BP	C	C	N/A	I
Federal Government	ISM	C	D	N	N
Finance	GM	D	D	N	I
Services	BP, ISP	D	D	Y	I
Discrete Manufacturing	BP	C	D	Y	I
Discrete Manufacturing	ISM	C	C	N/A	I
Discrete Manufacturing	ISP	D	D	Y	N
Discrete Manufacturing	BP	C	D	Y	N
Services	GM	D	D	Y	I
Services	GM	C	D	Y	I
Process Manufacturing	ISP	D	D	Y	I
Finance	GM	C	D	Y	I
Services	ISP	D	D	Y	I
Process Manufacturing	ISP	D	D	Y	I
Process Manufacturing	ISM	C	C	N/A	I
Process Manufacturing	ISP	C	C	N/A	N
Process Manufacturing	ISM	C	C	N/A	I
Process Manufacturing	ISM	C	C	N/A	I
Process Manufacturing	ISM	C	C	N	I
Process Manufacturing	ISM	C	C	N/A	I
Process Manufacturing	ISM	D	C	N	N
Process Manufacturing	ISM	C	C	N/A	I
Process Manufacturing	ISM	C	C	N/A	I
Services	ISM	C	C	N/A	I
Process Manufacturing	ISM, ISM, ISP	C	D	N	I
Process Manufacturing	ISM	D	D	Y	I
Energy	ISP	D	D	Y	N
Utility	GM	C	C	N/A	I
Discrete Manufacturing	ISP	D	C	Y	N

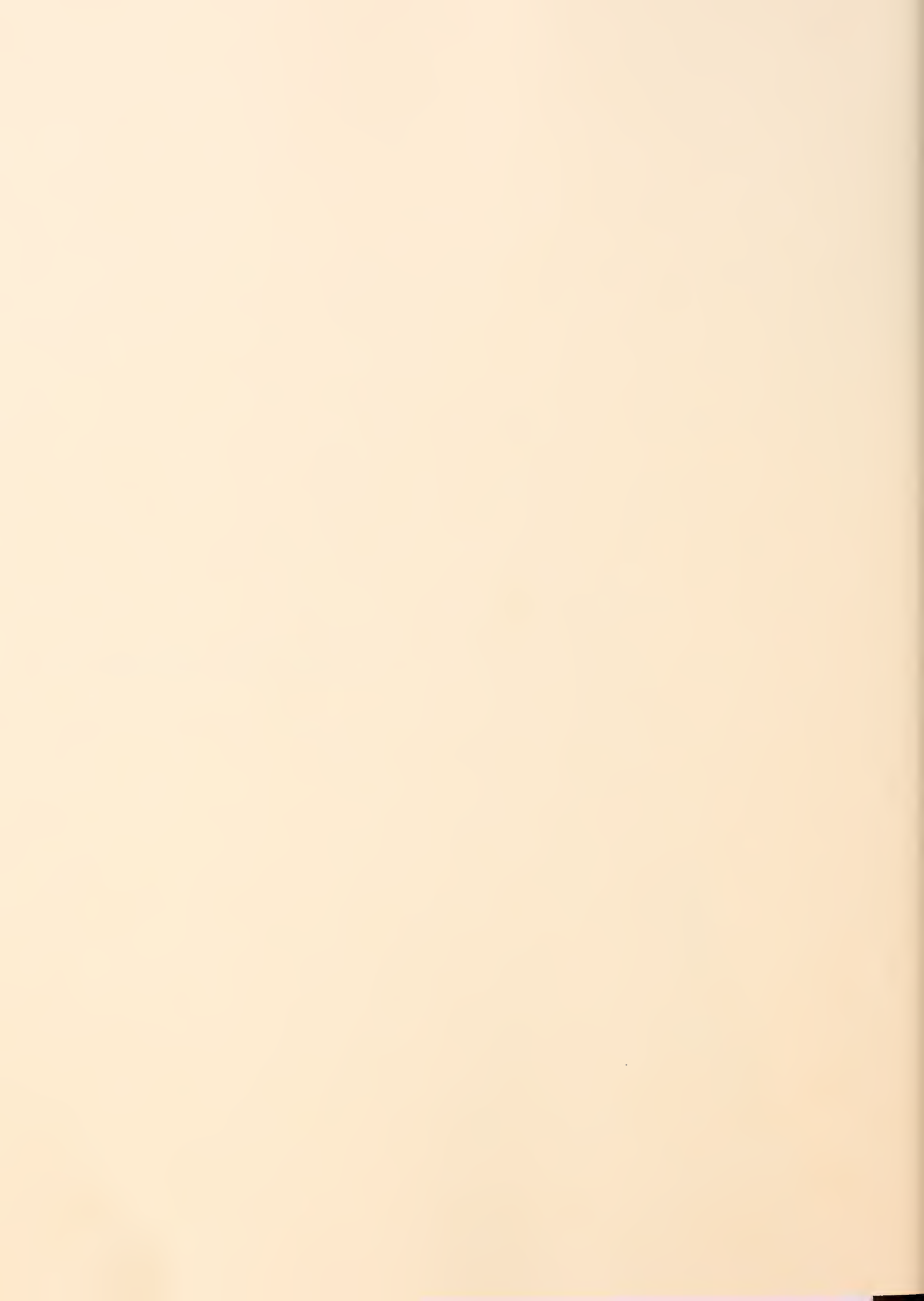
Legend: BP = Business Planner, GM = General Manager, ISM = Information Systems Manager,
ISP = Information Systems Planner, C = Centralized, D = Decentralized, I = Integrated Plan

EXHIBIT A-2

RESPONDENT POSITION PROFILE

	<u>TOTAL</u>
Information Systems Management	15
Business Planner	5
Information Systems Planner	11
General Management	6
	<hr/>
	37

APPENDIX B: RESOURCES



APPENDIX B: RESOURCES

A. BOOKS

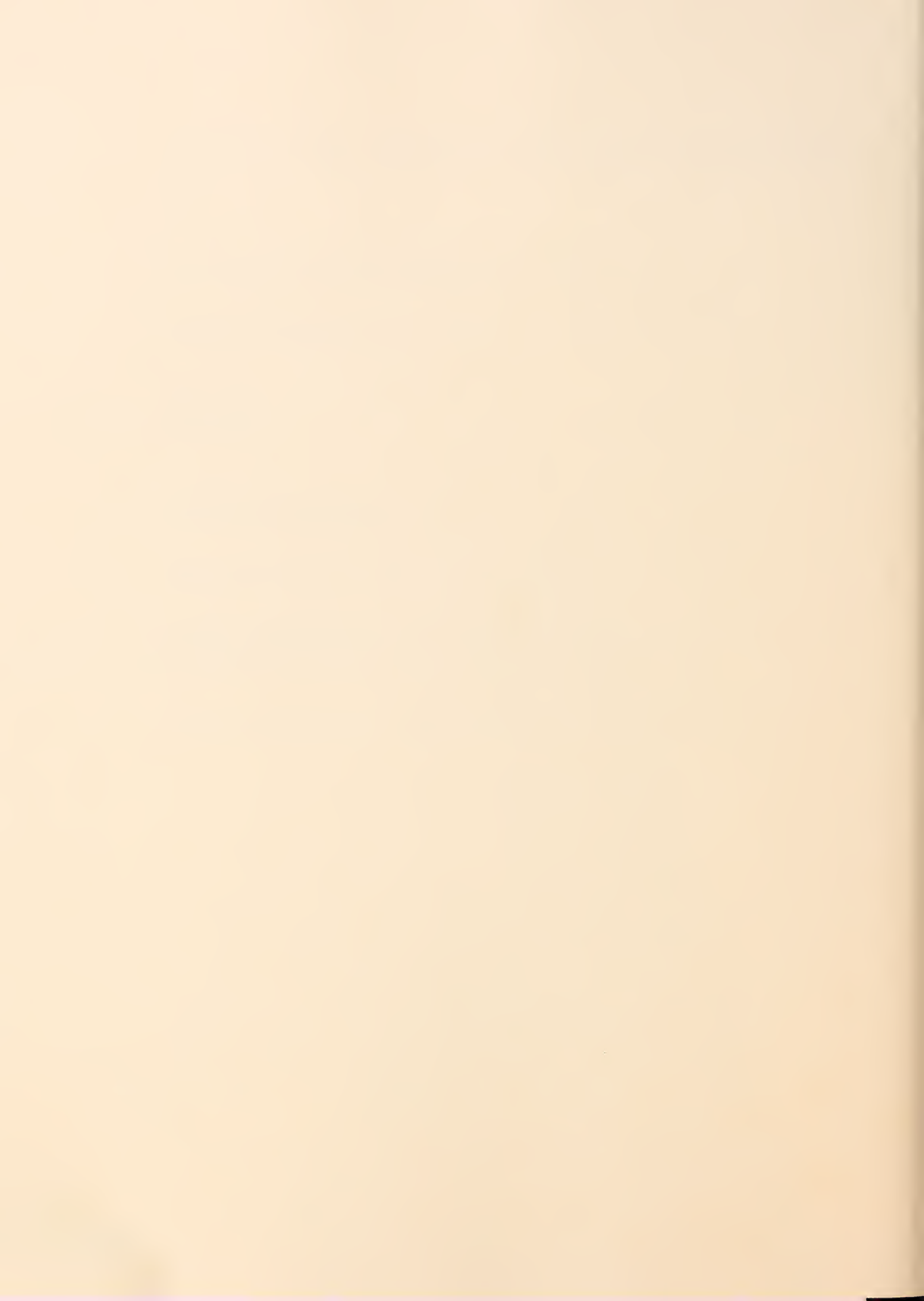
- Chief Executives Define Their Own Data Needs, John Rockart, Harvard Business Review, 1979.
- Executive Guide to Successful MRP II, Oliver Wight, 85 Allen Martin Drive, Essex Junction, VT 05452 (Free) 1-800-343-0625.
- Megatrends, John Naisbitt.
- Business Systems Planning: IS Planning Guide, IBM, GE20-0527-1.
- Journal of Capacity Management, Institute for Software Engineering.
- Corporate Information Systems Management: The Issues Facing Senior Executives, Warren McFarlan and James L. McKenney, Richard D. Irwin, Inc., Homewood, IL 60430, 1983.
- Executive Information Plan, IBM.
- In Search of Excellence, Thomas J. Peters and Robert H. Waterman.

- Competitive Strategy: Techniques for Analyzing Industries and Competitors, Michael Porter, The Free Press (Macmillan), 866 Third Avenue, NY 10022, 1980.
- Strategic Planning for Multinational Corporations, Selig.
- Strategic Planning for MIS, E. McLean, John Wiley and Sons, NY.

B. SEMINARS

- Business Systems Planning, IBM.
- Holland's IS Planning, Holland Systems Corporation, Ann Arbor, MI.
- AGS ISP Methodology, AGS Management Systems, Inc., 320 Walnut Street, Philadelphia, PA 19106.
- IS Strategic Planning and Long-Range Planning, SRI International.

APPENDIX C: I.S. STRATEGIC PLAN OVERVIEW



APPENDIX C: I.S. STRATEGIC PLAN OVERVIEW

1.0 PLANNING ASSUMPTIONS AND MODEL (for Company ABC)

The basic planning assumption is that the Enterprise and Division needs and goals will determine our IS support strategies and plans. This planning is for internal systems support and does not include systems efforts undertaken for clients. (This was left up to the appropriate division. ABC's IS provided network, shared computing, and other shared IS support only.)

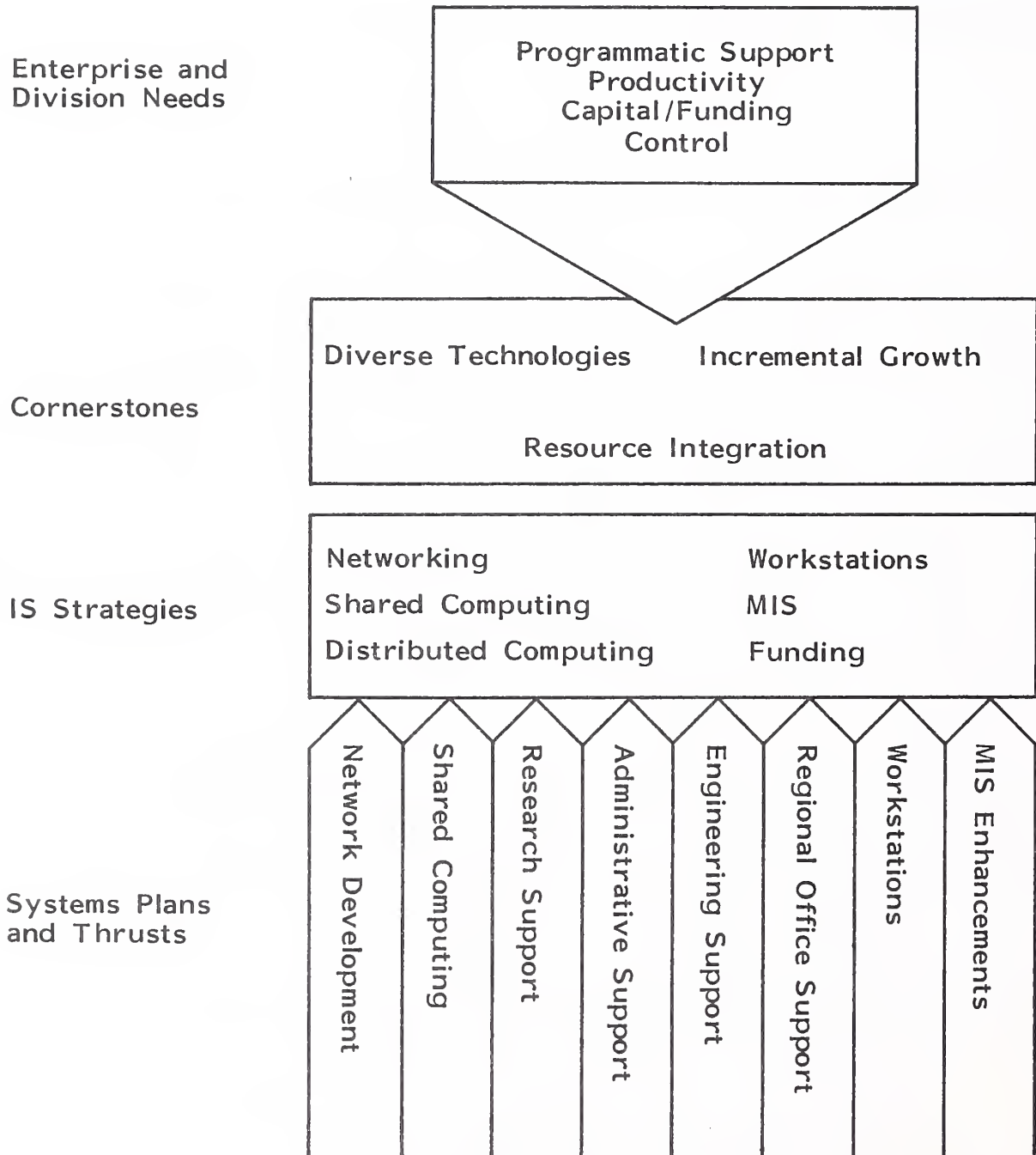
Appropriate application of systems technology to ABC needs dictate the cornerstones - diverse technologies, resource integration, and incremental growth - upon which the ABC systems strategies are based.

Individual systems plans and thrusts throughout ABC implement the systems strategies. These implementation plans and systems strategies taken together constitute ABC's IS strategic plan. IS and Administration is responsible for establishing these ABC systems strategies and for leading some of these individual thrusts.

The four-level model shown in Exhibit C-1 shows how the "top-down" needs and "bottom-up" thrusts relate to the ABC IS strategies and cornerstones.

EXHIBIT C-1

FOUR-LEVEL PLANNING MODEL



2.0 ENTERPRISE AND DIVISION NEEDS

2.1 Program (Function) Support

Provide information systems support for Enterprise programs, such as:

- Acquiring better systems development, analysis, modeling, and design tools (e.g., LISP machines, economic modeling).
- Acquiring secure systems resources to support classified work.
- Aiding the evaluation and acquisition of computerized laboratory control, data collection, and analysis systems.
- Improving information systems support in regional offices.
- Developing the capability to create and access specialized research and consulting information bases.

2.2 Productivity

Improve productivity to reduce overhead and increase Enterprise competitiveness. Information systems can help meet this need by:

- Improving professional support (e.g., decision support systems for consultants, easy-to-use graphics systems).
- Improving administrative support (e.g., friendlier, more integrated management information, more cost-effective text processing, automated TWX/Telex services).
- Increasing staff awareness regarding the use of new information systems technologies (e.g., user training assistance, new product exposure).

2.3 Capital and Funding

Expand the use of information systems within ABC's financial priorities by:

- Providing phased replacement and upgrade of equipment and software (e.g., dumb terminals, MIS programs).
- Maintaining proper balance between:
 - Effectiveness of locally dedicated resources.
 - Economies of scale for broadly shared resources.
- Employing appropriate financing and inventory management for equipment with short technical lifespan (e.g., microprocessors, personal computers, word processors).
- Providing information systems capital funding based on strategic rather than historical needs.

2.4 Control

Ensure management control of information systems through a combination of:

- Supporting decentralized operation of information systems.
- Maintaining the quality of information systems appropriate to ABC's reputation and needs.
- Establishing of information systems service pricing policies which are:
 - Individually equitable.

- Beneficial to ABC.
- Competitive with alternatives.
- Reviewing computer-related capital requests.

3.0 CORNERSTONES OF INFORMATION SYSTEMS STRATEGIES

ABC information systems needs must be satisfied within the context of:

- ABC's charter and culture.
- ABC's financial resources.
- Information systems technology.

These factors lead to the cornerstones upon which our systems strategies are based.

3.1 Diverse Technologies

ABC, by the diverse nature of its work, will have to continue to utilize many different systems technologies. Some will be mature and others will be state-of-the-art. Different hardware, software, and vendors will be involved, and ABC will have to incorporate new systems easily. Any systems strategies will therefore have to allow for the simultaneous existence and use in ABC of many different computer and software products in a multivendor environment.

3.2 Resource Integration

The diverse systems resources will need to be integrated so that a person can:

- Access multiple systems through a single workstation.

- Transfer information among the diverse systems.

First, individual users will need to access more than one system. For example, a given engineer may need to use electronic mail, MIS information, and specialized data bases in addition to various analytical computing tools in his engineering discipline. ABC cannot afford to provide a different workstation for each system a staff member needs to access. A user will need to have a single workstation or terminal which can access many different local and remote systems.

Second, since multiple systems will be used by individuals to perform different operations on data and text, it is important that this information can be accessed and transferred among systems and individuals. Resource integration is fundamental to the text creation, editing, formatting, and printing in today's electronic office and to data gathering and analysis in the engineering laboratory.

3.3 Incremental Growth

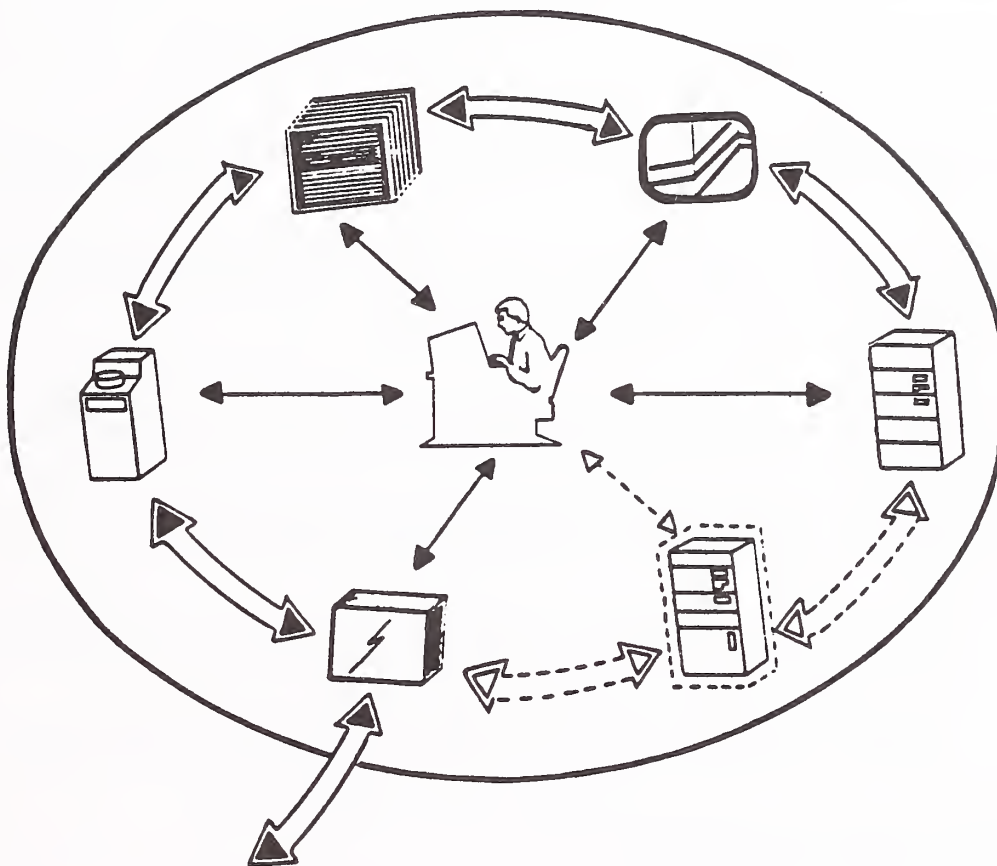
ABC does not have the capital resources to implement a major systems plan in one step. Strategies must allow priorities to be set so some objectives are accomplished before others. Not only equipment upgrade but capacity growth and the introduction of newer and more powerful technologies must be phased.

4.0 SYSTEMS STRATEGIES

Our cornerstones clearly lead us to a strategic model which is illustrated in Exhibit C-2. This shows diverse technologies (shared, dedicated, and MIS computers, graphics, text and storage devices) all accessible from our staff's workstations (small arrows). Also shown is the integration of the resources (large arrow). The dotted lines indicate incremental growth capability.

EXHIBIT C-2

SYSTEM STIATEGIC MODEL



ABC is following a natural evolution in its information systems growth which is taking us from emphasis on hardware to more concentration on applications and integration of information.

This section summarizes the major information systems strategies. The next section will describe that subset of the information systems plans and thrusts in which Information Systems is deeply involved.

4.1 Networking

We will continue to develop and operate a local area network that will support:

- Local and remote connections to computers for a variety of terminals, word processors, and microcomputers.
- Resource sharing among diverse shared/dedicated computer systems.
- Office communications services like electronic mail.
- Transfer of data files and messages between computer systems.
- Gateway access to other external networks (e.g., TWX/Telex).

4.2 Shared Computing Facilities

We will continue to maintain a variety of centrally operated computing services to meet needs by:

- Providing or brokering general-purpose computing facilities for shared use throughout the Enterprise.
- Providing overflow or supplemental services to those who have their own systems.

- Assisting in dedicated equipment selection, installation, and operation.
- Offering computer use consulting, education, and documentation.
- Encouraging continuing user review and prioritizing of Information Systems plans and services through:
 - Annual pricing reviews.
 - Computer Advisory Board.
 - MIS Applications Steering Committee.

4.3 Distributed Computing

We will continue to decentralize computing and office automation at ABC. The rate at which this will occur will be based on priorities and our ability to plan and capitalize the effort.

- Participation in divisional planning and implementations.
 - Lab computing.
 - Workstation planning.
 - Administrative support systems.
 - Decision support systems (based on personal computers for professional staff).

4.4 Workstations

We will continue to expand the power and number of specialized and general workstations with the primary guidelines being:

- The Enterprise will continue to emphasize workstation utility and ergonomic suitability.
- A single workstation will provide staff with access to many shared, locally distributed, and external information systems resources (a "single window to the world").
- Workstations must be connectable to the ABC computer network unless there is an overriding reason (e.g., security).
- Specialized professional workstations will be acquired as appropriate for specific program or administrative needs (e.g., graphics, computer science, text processing).
- Personal computers and microcomputers will be used as professional workstations (e.g., Decision Support Systems).

4.5 Management Information

Additional management information and administrative systems support will be provided. Current priorities are in the areas of marketing, project control, human resources, and source data capture. Specifically:

- Information Systems Development (ISD) has been formed to provide this support. MIS development, computer operations, data base management, and applications programming support will be transferred to ISD.

- Implementation planning is underway for current application priorities and to define how new applications will interface with MIS while:
 - Maintaining Enterprise financial data integrity.
 - Interfacing with local organization ad hoc and periodic reporting requirements.

4.6 Funding and Financing

- Appropriate funding and financing arrangements will continue to be sought to acquire and manage information systems equipment.
- Annual pricing reviews for Enterprise services will:
 - Provide accurate information for project planning and organizational budgeting.
 - Involve the users of services in selection and optimization of pricing approaches.

5.0 STATUS OF IS SYSTEMS THRUSTS AND PLANS

In order to ensure anonymity for the enterprise providing this plan, this section has been deleted. It covers details of thrusts and plans for each of the following topics:

- The Network.
- Shared Computing.
- Automated Support of Administrative Services.

- Automated Support of Research Laboratories.
- Automated Support of Regional Offices.
- Automated Support of Engineering.
- Workstations.
- MIS Enhancements.

Each topic is covered in enough detail to provide a document against which to monitor progress over the coming year.

6.0 SUMMARY

This overview has summarized our strategic systems needs and goals, cornerstones, strategies, directions, and implementation plans. The logic, development approach, and relationship of these strategic plan elements was also briefly presented. The strategic systems plan itself is the combination of this overview plus the detailed implementation plans which are referenced in the appendices as well as those which are being pursued by divisions. Specific studies, justifications, milestone schedules, and costs are contained in the referenced documentation.

The purpose of this overview is to inform, solicit constructive advice, and enable a fairly distributed level of systems planning throughout ABC within a common and compatible strategic framework. Coordination with IS will occur as part of systems or software acquisition review and by participation during the plan development.

APPENDIX D: I.S. ANNUAL REPORT

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- Mission Statement: To be a major force in enhancing XXX's competitive posture and capability for growth by providing effective systems and relevant information to support management decision making and by efficiently developing, operating, and maintaining systems and procedures with high business leverage.
- Assessment Criteria for IS Resource Allocation:
 - Fit with XXX's strategic thrusts.
 - Rigorous benefit-to-cost analysis.
 - Strong client endorsement and user support.
 - Acceptable risk profile.
 - Affordability and manageability.
- IS Strategies:
 - Seek on-going productivity improvements.
 - Support the user-computer interface.

- Emphasize highly profitable new systems development.
 - Strengthen our role as consultants.
 - Maintain a high level of client and user involvement.
 - Create and maintain a balanced applications portfolio based upon business priorities.
 - Implement common systems where appropriate.
 - Sustain a technically current environment.
 - Manage and guide computer and communications facilities.
 - Pursue excellence in people.
- How IS supports XXX's business strategies: (The examples on the following pages are taken from six specific business strategies which are part of two generic strategies: build the business and do it productively.)

XXX's Business Strategies

IS Strategies

IS Key Programs

1) Build the business

Maintain meaningful customer/franchise services.

Assume a PROACTIVE role with Sales to better understand and anticipate trends in the trade.

Support Sales in understanding the trade's use of point-of-sale data in managing inventories and shelf space.

Develop improved data accessibility and analytical capabilities in support of customer analysis activities, including comparative buying, merchandising and profitability measures.

Expand the capabilities of existing volume tracking and retail intelligence.

2) Build the business productively

Improve professional productivity and reduce administrative costs.

Identify and support opportunities to reduce administrative costs and improve professional productivity through computer-based systems, office automation and streamlined procedures.

In key leverage areas support studies and assist clients in implementing administrative work simplification, activity elimination, and the technologies of office automation.

Increase IS efficiency in providing services/support across the corporation while maintaining sufficient flexibility to meet changes in XXX's environment.

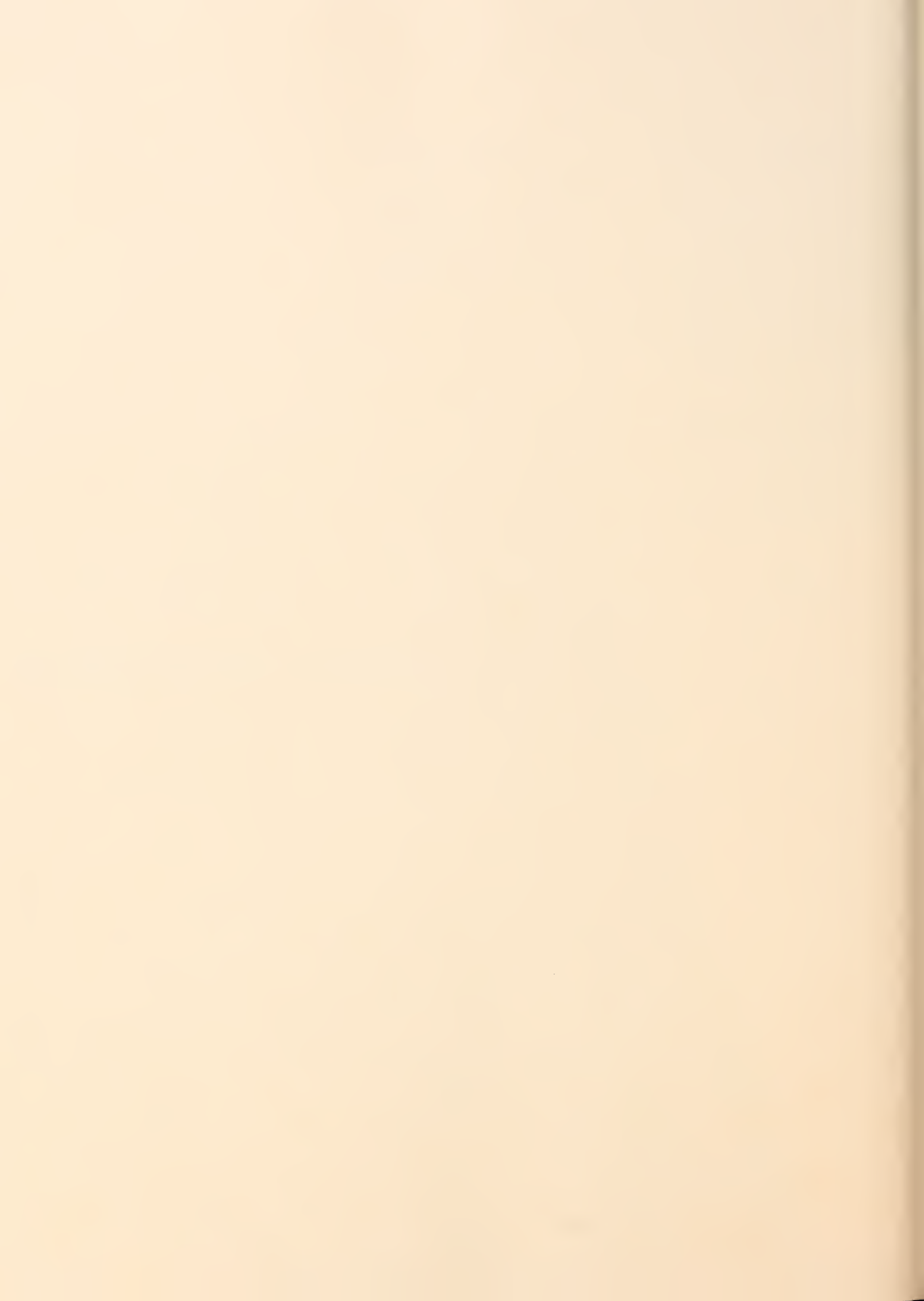
Promote the use of computer-based analytical tools to improve business analysis capabilities and productivity.

Provide leadership in ensuring that XXX's information structure can accommodate alternative organization structures.

Initiate a program for improved software-development productivity through the use of higher-level languages and prototypes. Where appropriate, make the tools available to users.

Establish a process for change management in user communities significantly affected by IS activities.

APPENDIX E: QUESTIONNAIRE



APPENDIX E

TOPIC STATEMENT: We are writing a report on integrating information systems planning and business planning and would like to ask you some questions. The questions will take no more than 15 minutes to answer. For your assistance, we will send you a copy of the respondent summary of the report.

RESPONDENT FUNCTION: (Check one)

- ☐ Information Systems Management
☐ Business Planner
☐ Information Systems Planner
☐ General Management

1. CENTRALIZED or DECENTRALIZED:

We want to know how to characterize your company as centralized or decentralized in terms of information systems and business planning.

Is your Information Systems function centralized or decentralized?

☐ Centralized ☐ Decentralized

Does that mean your business planning is also centralized or decentralized?

☐ Centralized ☐ Decentralized

If decentralized, is there any corporate consolidation?

☐ Yes ☐ No

2. ISSUES:

What major issues are you addressing? (Check those which apply)

BUSINESS PLANNER or GENERAL MANAGEMENT

- ☐ Productivity
- ☐ Economic Downturn
- ☐ Other _____
- _____
- _____

INFORMATION SYSTEMS

- ☐ Manpower Planning and Development
- ☐ Capacity Planning
- ☐ System Architecture
- ☐ Microcomputer Proliferation
- ☐ Other _____
- _____
- _____

3. PLANS:

Do you have an Information Systems Plan? ☐ Yes ☐ No

If No - (terminate interview) _____

Do you have an business plan? (Either formal or informal) ☐ Yes ☐ No

If No - (terminate interview) _____

Do you believe you have an INTEGRATED Information Systems and Business Plan?

☐ Yes Go to **B**

☐ No Go to **A**

A NO - Integrated Information Systems Plan and Business Plan

4. Do you believe the two should be integrated? ☐ Yes ☐ No

Why or Why Not? _____

5. INPEDIMENTS:

What are the reasons or impediments to not integrating? (Check those which apply)

- ☐ Lack of Top Management Support
☐ Staff Constraints
☐ Time Constraints
☐ Don't Know Why We Should Integrate (Don't know the benefits)
☐ Don't Know How to Integrate
☐ Other _____

What do you feel the results of not integrating have been? (Check those which apply)

- ☐ Ineffective Resource Prioritization
☐ Information Systems Does Not Clearly Support Business Goals
☐ Increased Costs of Information Systems Development
☐ Other _____

6. METHODOLOGIES:

Do you (or did you ever) use any Information Systems Planning Methodology?

☐ Yes

☐ No (End the Interview)

Which one? (Check one)

☐ Business Systems Planning from IBM

☐ Critical Success Factors from MIT

☐ Internally Developed Methodology

☐ Other _____

Do you think there are deficiencies in the methodology you used, in terms of not promoting integration?

☐ Yes

☐ No (End the Interview)

What are the deficiencies? _____

End the interview (Make sure you have address to send respondent summary)

B YES - Integrated Information Systems Plan and Business Plan**7. DEFINITION:**

How do you define and characterize an integrated Information Systems and Business Plan? (Check those which apply)

- ☐ The Business Plan States the Information Systems Needs
- ☐ Business Plan and Information Systems Plan Calendars are Synchronized
- ☐ Line and Staff Managers Participate Actively in Information Systems Planning
- ☐ Other _____
- _____
- _____

8. BENEFITS:

What are the benefits you have derived from having integrated planning? (Check those which apply)

- ☐ Management Performance is Monitored Against the Business Plan
- ☐ Effective Resource Prioritization
- ☐ Reduced Costs of Information Systems Through Planning and Coordination
- ☐ Information Systems Clearly Supports Business Goals/Objectives
- ☐ Other _____
- _____
- _____
- _____
- _____

9. CONVINCING TOP MANAGEMENT

How did you convince top management of the need to integrate?

10. PARTICIPANTS:

Who participates in integrated planning and what are their roles? (Check those which apply)

ROLE

☐ Information Systems Management

☐ Information Systems Planner

☐ Business Planner

☐ Line Management

☐ General Management

☐ Other

11. RESOURCES:

What are the required resources?

How much time is required? _____

Do you use an outside consultant? ☐ Yes ☐ No

In Yes than Who? _____

Do you recommend any books or seminars? ☐ Yes ☐ No

If Yes than which Ones? _____

12. METHODOLOGIES:

Do you (or did you ever) use any Information Systems Planning Methodology?

☐ Yes ☐ No Go to 13

Which those applicable (check one)

☐ Business Systems Planning from IBM

☐ Critical Success Factors from MIT

☐ Internally Developed Methodology

☐ Other _____

Do you think there are deficiencies in the methodology you used, in terms of not promoting integration?

☐ Yes ☐ No Go to 13

What are the deficiencies? (For each Methodoly)

<u>METHODOLOGY</u>	<u>DEFICIENCY</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

13. INTEGRATED METHODOLOGY:

How would you characterize your methodology for integrating? (How have you integrated Information Systems Planning and Business Planning?)
(Check those which apply)

- ☐ Planning Sessions
- ☐ Joint Study Teams
- ☐ Integrated Systems Planning with the Budget Process
- ☐ Developed Guidelines for Line Managers to Develop Their Information Systems Plan With Their Business Plan
(If YES - ask what does it cover or could we get a copy?)

- ☐ Other

-
-

14. DOCUMENTATION RESULTS

What are the results or documentation of the Integrated Planning effort?
(Check those which apply)

☐ A Plan

What is the table of contents or could we get a copy?

☐ An Information Systems Annual Report

What is the table of contents or could we get a copy?

☐ Other (and can we get a copy?)

15. PAYBACK:

Is there a specific payback you have achieved? (We would like to develop a case study in more depth)

☐ Yes

☐ No

End the interview - (Make sure you have address to send respondent summary)

